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Beef is Beef? An Actor-Network Analysis of the 2012 LFTB Food Scare

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AN ACTOR-NETWORK ANALYSIS OF THE 2012 LFTB FOOD SCARE

BY

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This dissertation is approved as a creditable and independent investigation by a candidate for the Doctor of Philosophy in Sociology degree and is acceptable for meeting the dissertation requirements for this degree. Acceptance of this does not imply that the conclusions reached by the candidates are necessarily the conclusions of the major department

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ABSTRACT

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During March of 2012 a food scare erupted concerning the beef product lean finely-textured beef (LFTB) or, as it became pejoratively named, “pink slime.” This 2012 “pink slime” food scare resulted in major changes to the beef agrifood network including increases in U.S. ground beef imports and changes to ground beef purchasing policies in the public and private sectors. This dissertation utilized an actor-network theory-guided content analysis of videos produced by key network-buildings actors, ABC News and Beef Products Incorporated (BPI). The goal of the study was to uncover the process by which ABC News and BPI attempted to order the LFTB actor-network during the 2012 “pink slime” food scare. The analysis afforded special attention to the discourses employed and actors enrolled by ABC News and BPI to support their desired orderings of the LFTB actor-network. Finally, an actor-network conceptualization of habitus was utilized to explain the divergent network-building practices of these pro- and anti-LFTB actors.

CHAPTER ONE
- Introduction and Background -

Introduction

"Dude, it's beef!" was the refrain as South Dakota beef processing company Beef Products Incorporated (BPI), Iowa Governor Terry Branstad, Iowa State University students and faculty, farmers, livestock producers, and various representatives from the meat and poultry industry rallied together in ISU's Kildee Hall to save the imperiled processed beef product lean finely-textured beef (LFTB) (Vinchattle 2012). Meanwhile other actors representing Occupy Ames, the Iowa Farmers Union, and ISU's Leopold Center for Sustainable Agriculture coalesced outside the auditorium to express their frustration with the unlabeled sale of ground beef containing the LFTB product they termed "pink slime" in restaurants, grocers, and school cafeterias throughout the country (Vinchattle 2012). These "dueling rallies" (Vinchattle 2012) crystalize the fault lines of the conflicting discourses and actors comprising the 2012 LFTB food scare. Prior to following this controversy, however, it is necessary to provide some context to the scare.

What is lean finely-textured beef?

Understanding lean finely-texture beef entails an exploration of its origins. Lean finely-textured beef is a beef product invented by inventor and entrepreneur Eldon Roth. Roth is an influential figure in the industrial meat processing business with a career spanning over thirty years (Beef Products Incorporated 2012[b]). The founder and current owner of Beef Products Incorporated, headquartered in Dakota Dunes, South Dakota, Eldon Roth's success accelerated when in the early 1970s he invented a revolutionary way to reduce the freezing time of meat from between three to five days, to just two

minutes (Beef Products Incorporated 2012[b]). In the late 1980s, Roth devised a processing method to recover small bits of beef from trimmings leftover from making other cuts of meat (e.g. steaks, roasts, ribs). Roth's process heated the beef trimmings to around 100 degrees Fahrenheit, which melted their fat content (Greene 2012; Levenstein 2012). The trimmings were then placed in a centrifuge to spin out the fat and harvest the lean bits of muscle tissue left behind (Beef Products Incorporated 2012[b]). These bits of lean meat were then frozen to form the final product, dubbed "lean finely-textured beef," and shipped out for mixture with ground beef products at supermarkets and other food processors (Levenstein 2012). When LFTB is added to ground beef, the mixture constitutes an overall leaner finished ground beef product (Levenstein 2012). Beef Products Incorporated claims that LFTB was created as a response to consumer demand in the late 1980s and early 1990s for leaner beef containing less fat (Beef Products Incorporated 2012[d]). Throughout the 1990s, mass outbreaks of foodborne illness stemming from the consumption of ground beef contaminated with Escherichia coli (E.coli) 0157:H7 influenced Roth to develop a new process that, in addition to meeting lean beef demands, could reduce pathogen contamination in ground beef from bacteria like E.coli (Greene 2012).

According to the United States Department of Agriculture (USDA), ground beef is the most commonly consumed beef product in the United States (Greene 2012). Its popularity coupled with its physical properties mean that "pathogen contamination is of special concern for ground beef" (Greene 2012:3). While on other cuts of beef (e.g. steaks, roasts) pathogens that are on the outside of the item are killed via the application of heat, grinding beef into ground beef can mix pathogens throughout the product and

thus present an increased case for contamination if not cooked to a high enough temperature throughout (Greene 2012). Roth's solution for addressing this concern was to add an ammonia gas (anhydrous ammonia) treatment to LFTB in order to raise its pH and by doing so create a less habitable environment for bacteria like E.coli (Beef Products Incorporated 2012[b]; Greene 2012). The overall hope was that the addition of LFTB to other ground beef would then raise the pH of the entire product and thus reduce the overall amount of E.coli 0157:H7 bacteria inhabiting the ground beef supply (Beef Products Incorporated 2012[b]; Greene 2012). Roth's anhydrous ammonia process to produce LFTB was approved by the United States Department of Agriculture (USDA) in 2001 (Greene 2012).

While the effectiveness of the ammonia treatment process in reducing E.coli contamination is debated, the arrival of the new ammonia-treated lean finely-textured beef spurred growth for Roth's company as BPI opened and operated facilities in five different states (South Dakota, Iowa, Kansas, Texas, and Nebraska) by 2012 (Beef Products Incorporated 2012[b]). Prior to the 2012 LFTB food scare, lean finely-textured beef was within an estimated 70 percent of the US ground beef products (Beef Products Incorporated 2012[b]; Bittman 2012). In addition to other food processing companies, major grocery retail chains, global fast food corporations, and the USDA's National School Lunch Program (NSLP) were all major purchasers of BPI-produced lean finely-textured beef (Ross 2011). Despite BPI's success, their profitability and LFTB's presence within the ground beef agrifood chain experienced major challenges in March of 2012 when the American Broadcasting Corporation's (ABC) flagship news program, *ABC World News with Diane Sawyer*, aired a series of investigative reports that elevated

consumer concern over a product they dubbed “pink slime.” Prior to unfolding the events of the 2012 LFTB food scare, however, it is necessary to define exactly what constitutes a “food scare.”

What was the 2012 LFTB food scare?

Despite the success of BPI and the fixture of LFTB in the US food supply, in March of 2012 BPI and their product were embroiled in a nationwide food scare. Lean finely-textured beef moved from banal beef product within most of the U.S. beef supply to a hot topic in the news media, on college campuses, and eventually in the South Dakota court system (ABC News 2012[a]; Beef Products Incorporated 2012[l]; Furfaro 2012). The problem for BPI was that the moniker under which LFTB came to be known was the unwelcomed epithet “pink slime.” After receiving numerous customer inquiries regarding whether they used “pink slime” in their burgers, the restaurant chain Red Robin commissioned Harris Interactive Inc. to conduct an online poll of American adults to examine, among other consumer feedback, how many consumers were aware of and concerned with “pink slime” (Caulfield 2012). Results of Red Robin’s survey found that 88 percent of the approximately 2,000 respondents had heard of “pink slime,” of which 76 percent were “at least somewhat concerned” about the product (Caulfield 2012). Though the events that ultimately propelled consumers to this awareness occurred primarily over March of 2012, as displayed in the LFTB food scare timeline in Appendix A., the origins of “pink slime” stretch further back.

Before “pink slime” became a popular nickname for LFTB, the term was first shared in 2001 via a private email between two colleagues at the USDA (Moss 2009). Gerald Zirnstein, a food scientist working at the USDA in 2001, sent an email to another

work colleague explaining his disapproval with the use of LFTB in ground beef and referring to it as “pink slime” (Gillam 2012). The term remained unknown outside of Zirnstein’s email until his words resurfaced via a Freedom of Information Act request by *New York Times* journalist Michael Moss (2009). Moss featured Zirnstein’s concerns about “pink slime” in his article questioning the safety of ground beef, but his article caused little stir amongst consumers (2009). Popular discussion of “pink slime” remained relatively dormant until nearly three years later when a dramatization of the process used to make the product appeared an ABC television program, *Jamie Oliver’s Food Revolution* (Oliver 2011).

The premise of the ABC show *Jamie Oliver’s Food Revolution* was that British celebrity chef, Jamie Oliver, was on a mission to improve diets of students in the Los Angeles Unified School District (Oliver 2011). During one episode Oliver conducted a crude demonstration of BPI’s LFTB process through utilizing household ammonia cleaner, beef trimmings, and a clothes washing-machine (Oliver 2011). After dousing beef trimmings with household ammonia cleaner, Oliver dumped the mixture in a clothes washing machine (Oliver 2011). Oliver reference the finished product as “pink slime” and explained to a shocked audience of children, parents, and teachers that it was in most of the ground beef purchased at supermarkets and used within school lunches (Oliver 2011). Despite this nationwide broadcast of Oliver’s alarming demonstration, still relatively little public attention was given to the presence of LFTB in U.S. ground beef until nearly one year later in March of 2012.

Between March 7th and April 3rd of 2012, ABC News, the news broadcasting division of the American Broadcasting Corporation, broadcast an 8-part series of

investigative-style reports covering “pink slime” (LFTB) on their nightly news program *ABC World News with Diane Sawyer* (See Appendix C). While each report opened with head *World News* anchor Diane Sawyer, it was ABC News Senior National Correspondent Jim Avila who spearheaded the investigation (ABC News 2012[a]). The reports alerted the public that ammonia-treated LFTB or “pink slime” was “hidden” in nearly 70 percent of all ground beef, including the ground beef in the National School Lunch Program (NSLP) (ABC News 2012[a]). ABC News interviewed former USDA food scientist Gerald Zirnstein, organic butchers, food bloggers, consumers, and a number of other actors who were all concerned about the presence of “pink slime” in ground beef. What followed were reports of phone calls and emails from angry consumers to grocery retailers, restaurants, the USDA, and public schools, mostly demanding the labeling or complete removal of LFTB from their ground beef products (ABC News 2012[b]; Siegel 2012). “Pink slime” progressed from a clever term within an internal USDA email, entered the lexicon of the American vocabulary, and developed into a full-blown food scare.

Within the month of March 2012, consumer concerns over “pink slime” impacted changes in private (e.g. grocery retailers) and public (e.g. USDA) policies regarding ground beef, led to the closure of three BPI processing plants, and had impacts upon the ground beef agrifood network at a national and global scale (ABC News 2012[e]; ABC News 2012[f]; Greene 2012). Though its “pink slime” alias dates back to internal USDA emails in 2001, it is because of the acceleration of concern over LFTB and impact upon the LFTB network beginning in March of 2012 that this food scare is referred to as the “2012 LFTB food scare.” The widespread concern over LFTB and the resulting impacts

to local and global food systems are a testament to the importance of examining the 2012 LFTB food scare. Though the aftermath of the 2012 LFTB food scare is still ongoing, some conclusions are drawn regarding its more permanent impacts upon the ground beef agrifood network, including BPI, the beef cattle industry, and U.S. food policy.

BPI undisputedly incurred strong negative impacts to their business as a result of the 2012 LFTB food scare. During the scare, BPI suspended operations in three of their four plants due to decreased demand for their flagship lean finely-textured beef product. According to Nick Roth, BPI engineer and son of Eldon and Regina Roth, the closure of these plants led to the loss of "700 jobs" and "80% of [BPI's] sales" (Beef Products Incorporated 2012[l]). While their formerly suspended plant in Garden City, Kansas reopened in August of 2014, two of BPI's three shuttered plants remain closed (Huffstutter 2014). Though drought and other recent disruptions in the beef cattle market pushed beef prices higher, influencing an uptick in demand for lower-cost beef like LFTB, it is not clear whether BPI's two remaining "suspended" plants in Texas and Iowa will reopen (Huffstutter 2014). Meanwhile, BPI's defamation lawsuit filed against ABC News in September of 2012 is awaiting discovery pending an appeal to the South Dakota State Supreme Court (Cano 2014). Apart from the impacts to BPI's business, there is also evidence to suggest that the 2012 LFTB food scare caused some alterations to the global beef cattle supply chain.

The current drought impacting most of the Western United States translates to difficulty discerning some of the impacts the 2012 LFTB food scare has had upon the beef cattle industry. Despite this difficulty, some studies indicate immediate short-term and longer-lasting fallout resulting from the LFTB controversy. In the short-term, some

agriculture economists suggested a sharp increase in beef imports into the U.S. from Canada, Australia, and New Zealand as an immediate result of the scare (Greene 2012; Pruitt and Anderson 2012). It is important to note that these economists recognized that the increased beef imports also occurred within the context of a Western U.S. drought (Pruitt and Anderson 2012). Irrespective of the drought, some agriculture economists still argued that the events of the 2012 LFTB food scare added to beef importation (Pruitt and Anderson 2012). Beyond this short-term spike in imports, studies on the impacts of the controversy also revealed more specific negative impacts upon the market for lean beef trimmings, the type of material used to make LFTB (Greene 2012; Pruitt and Anderson 2012). The decreased demand of retailers, the USDA National School Lunch Program, and other LFTB customers is cited as forcing LFTB into other markets primarily not for human consumption (Greene 2012; Pruitt and Anderson 2012). According to Greene (2012), "the price of fresh 50% lean beef trimmings plunged 42%, from $1.01 per pound" at the beginning of March 2012 to "$.59 per pound" at the end of the same month (p.8). The market for these fattier and less expensive trimmings is expected to stay lower in concern with the low demand for LFTB, while the "price of fresh 90% lean beef trimmings," has risen and thus influenced overall higher prices for leaner ground beef (Greene 2012:9). As the Western U.S. drought continues and the price of fresh beef increases, it is possible that the higher prices may lead to increased demand for the cheaper lean beef (Greene 2012). Perhaps BPI's recently reopened Kansas plant is a hint of better things to come for the lean beef market.

The third major change to the fresh ground beef supply chain came in the form of altered public and private policies. Changes in public policy included the introduction of

new ground beef labels as well as a new purchasing policy for public schools through the USDA-run National School Lunch Program. Private policy changes included new LFTB-free ground beef purchasing policies for private grocery retail chains like Safeway and Kroger.

As a result of the 2012 LFTB food scare, the USDA made changes to ground beef labeling policy as well as purchasing options within the National School Lunch Program. Despite initial resistance from pro-LFTB actors, the USDA introduced a series of new "contains LFTB" labels approved for voluntary application by retailers (Avila 2012). These labels were not alterations to the ingredients list on existing ground beef labels as the USDA does not consider LFTB to be an additive, ingredient, or anything other than ground beef (Greene 2012). In a press release, BPI later supported the new policy and described it as an "important first step in restoring consumer confidence in their ground beef" (Avila 2012). It is unclear how many, if any, retailers adopted the new labels.

Within the National School Lunch Program, the USDA also moved to allow states a choice between purchasing ground beef containing LFTB or, at a higher price, ground beef without LFTB (Greene 2012). As a consequence of this decision, nearly every state apart from Iowa, Nebraska, and South Dakota initially opted out of purchasing ground beef containing LFTB for their 2012-2013 lunch programs (Bottemiller 2012). This move translated to states dropping their purchases of ground beef products containing LFTB. Yearly orders placed to the USDA in May 2012 included about 20 million pounds of non-LFTB ground beef compared with only 1 million pounds of ground beef products containing LFTB (Bottemiller 2012). Though four more states returned to ordering ground beef containing LFTB in 2013, the majority of states continued to opt-

out of using the product (Knowles 2013). Drought, higher beef prices, and the diminished role of "pink slime" in the media and public consciousness may contribute to more states renewing their purchase orders for cheaper LFTB-containing beef products.

Examining the fallout of the 2012 LFTB food scare revealed that the scare yielded significant changes to the ground beef agrifood network. The goal of this case study is to follow the practices of network-building actors, ABC News and BPI, through the 2012 LFTB food scare in order to understand the process by which this event led to these national and global alterations of the ground beef agrifood network. In this pursuit, this study aims to answer three key questions: 1) what were the discourses deployed by network-building actors in order to translate the 2012 LFTB food scare?, 2) who were the actors enrolled to support these conflicting discourses?, and finally 3) what are some ways in which these practices (discourses and actors enrolled) can be explained using the application of an actor-network conceptualization of habitus? These questions move beyond the production-consumption dichotomy (i.e. examining food scares from either the perspective of the producer or consumer) and focus on the core network-building processes by which the reordering of the ground beef agrifood network occurred during the 2012 LFTB food scare.

In the discussion that follows, this research is first placed within in the context of the current literature, attending to both the literature covering food scares and the use of actor-network theory (ANT) in food and agriculture analysis. Second, the theoretical foundations of ANT and food studies are discussed, emphasizing the key concepts used in this analysis and as operationalized in the methods and research design. Third, and in the three ensuing chapters, I present the findings in this study that align with analytical

understandings on discourse coalitions, problematizations, and the explanatory habitus structure differentiating the opposing actors and networks. The conclusion summarizes the findings, addresses the resolution in my research questions, examines limitations of this study, and provides suggestions for future research.

CHAPTER TWO
- Review of Literature -

What are food scares?

In their pioneering text *Sociology on the Menu: an Invitation to the Study of Food and Society*, Alan Beardsworth and Theresa Keil (2001) asserted that while providing pleasure, energy, and health, food has a "paradoxical nature" in that it is also a source of ambivalence and anxiety. Levenstein (2012) proposed that food is one of the most anxiety-producing interactions humans have with the natural world because food decisions occur within a context of contradictory health and nutrition information perpetuated by both governments and news media. In addition to the uncertainty introduced by media, there is the real certainty that the consumption of food can indeed make the consumer ill or perhaps worse. Beyond simply satisfying the palate, food can produce gustatory displeasure and, whether from allergens or other contaminants, introduce illness, disease, and even death. Even with the great food safety improvements over the 20th century, the threat of illness or death from food consumption remains a modern 21st century reality (United States Centers for Disease Control and Prevention 1999). In fact, a 2013 United States Centers for Disease Control and Prevention (CDC) study estimated that each year Americans experience approximately 9 million foodborne illnesses out of which nearly 57,000 people are hospitalized and 1,400 die (Painter et al. 2013). Within these statistics are the shared experiences of individuals sickened through consuming contaminated food products from the same, often mass-produced, sources, a phenomenon known as a "food scare."

According to Beardsworth and Keil (2001), a food scare is an "acute outbreak of collective nutritional anxiety which can seize hold of public awareness and give rise to

significant short- and long-term consequences" (p.163). Food scares are "acute" in the sense that they often suddenly appear in the consciousness of nervous consumers and airwaves of the news media, but then fade almost just as quickly. Still, as Beardsworth and Keil (2001) highlighted, food scares often have substantial consequences for consumers, the food and agriculture industry, and both private and public food policy. Though food scares may involve a variety of different food products and manifest for multiple reasons, Beardsworth and Keil (2001:163) constructed an ideal-typical model through which food scares generally unfold (Table 1).

Table 1. Beardsworth and Keil's Food Scare Sequence Model (2001:163).

1.	Initial 'equilibrium' state in which the public are largely unaware of or are unconcerned about, a potential food risk factor.
2.	Public initially sensitized to a novel potential food risk factor.
3.	Public concern builds up as the risk factor becomes a focus of interest and concern within the various arenas of public debate.
4.	Public response to the novel risk factor begins, often consisting of the avoidance of the suspect food item. (This response may be an 'exaggerated' one, apparently not in proportion to actual risk.)
5.	Public concern gradually fades as attention switches away from the issue in question and a new 'equilibrium' state establishes itself. However, chronic low-level anxiety may persist, and can give rise to a resurgence of the issue at a later date.

During the first stage of a food scare, consumers are "largely unaware of or are unconcerned about, a potential food risk factor" (Beardsworth and Keil 2001:163). It is in this stage that a consumer primarily interacts with a "blackboxed" network where relations that make up a given food item (e.g. farm laborers, factory workers, insects, chemical herbicides, genetic modification, processing agents, bacteria) are so tightly embedded and operating at such a level of efficiency that the consumer's interaction with the food is wholly based upon their purchase of the finished product. That is, the

consumer knows the food came from somewhere and ended up on the shelf at their local grocery retailer, but has little knowledge of the relations at work to deliver the product to the shelf apart from what s/he can view on the label. For the consumer, all they need to know is on the label. The label provides them with all of the information that they can know about the relations represented by that item of food. When this blackboxed understanding is interrupted by the exposure of some (real or perceived) risk associated with the food item, consumers are confronted with unknown actors and relations not appearing on the label. Their familiar and comfortable relationship with that food becomes complicated and anxious.

In the second stage of food scares, consumers are "sensitized to a novel potential food risk factor" (Beardsworth and Keil 2001:163). Apart from the unfortunate consumers who consume contaminated food items, most people are alerted to the presence of a food risk factor through the news media (Levenstein 2012; Lockie 2006). Depending on the scope of their audience, news media broadcasts can quickly alert millions of consumers about a food risk and in turn "set off food scares" (Freidberg 2004:178). Generally, two potential risk factors are at the heart of most food scares: 1) actual bacterial, viral, or chemical contamination of a food item resulting in consumer illnesses or even death, or 2) new information about the potential for bacterial, viral, or chemical contamination of a food item (e.g. new information about current practices).

The first type of food scare occurs when consumer consumption of a contaminated mass-produced food item causes widespread acute illness. Perhaps the most famous example of this type of food scare is the 1993 Jack-in-the-Box Escherichia coli O157:H7 (E.coli) food scare which involved the sale and consumption of

undercooked ground beef in hamburgers from 73 Jack-in-the-Box restaurants (Flynn 2009). The Jack-in-the-Box E.coli scare resulted in the illnesses of approximately 700 people and the deaths of two consumers (Flynn 2009). More recent parallels to the Jack-in-the-Box food scare include countless E.coli O157:H7 food scares involving raw sprouts (Jalonick 2012) and bagged spinach or lettuce (USDA 2012), and numerous salmonella scares involving chicken eggs (Associated Press 2010). Not all food scares stem from the consumption, and resulting illness or death, of contaminated food items.

The second type of food scare occurs when the public are alerted to new information (through research, whistleblowers, or regulatory agencies) about a potentially harmful ingredient, production aid, or processing agent contaminating a food item. These scares still involve the threat of possible negative physiological consequences resulting from consuming a food item, but the threat is less salient and potential harm less immediate. The Alar (daminozide) food scare during in the mid- to late 1980s is a well-known example of this second form of food scare. Public anxiety concerning this scare ballooned after research reports and warnings released from the United States Environmental Protection Agency and Natural Resource Defense Council revealed that exposure to Alar, a chemical applied to apples to prevent them from ripening too quickly, may pose a health risk due to releasing carcinogens upon breakdown (Herrmann 1997). Though it did not result in any traceable illnesses or deaths, the high anxieties comprising the Alar scare still negatively impacted the consumption of apples and apple products (Herrmann 1997).

The Alar food scare also captured the attention of the public through multiple news media reports, including an investigative special on the ABC News program *60*

Minutes, as well as attention from concerned celebrity parents like actress Meryl Streep (Herrmann 1997). The translation of the Alar debate to news specials, congressional hearings, and even celebrity activism reflects the third stage of Beardsworth and Keil's (2001) food scare model. In the third stage of food scares the concern over the risk factor, in this case Alar, spreads through "various arenas of public debate" (p.163). One of the central actors in the spread of this information and is the news media. Various studies on food scares have highlighted the magnifying affect that the news media play in precipitating food scares (Beardsworth and Keil 2001; Levenstein 2012; Lockie 2006). Beardsworth and Keil (2012:165) proposed that during food scares the news media create a "news spiral" or a feedback loop of concern where reporters alert consumers to a particular food risk and thus raise their anxieties, and then cover these anxieties in broadcasts to fuel further concerns over the food product in question. The consumer response produced by these activities constitute the fourth stage of the food scare model.

Within the fourth stage of the food scare model presented by Beardsworth and Keil (2001:163), the public respond to the food scare – usually by avoiding the particular food associated with the risk factor. During the Alar scare, many consumers abstained from the consumption of fresh apples, apple juice, apple sauce, and many other apple products (Hermann 1997). Other food scares, including the 2012 LFTB scare, resulted in similar abstentions. The immediate changes in consumption patterns have significant impacts upon the industries associated with the food item posing the risks. The 1996 bovine spongiform encephalopathy (BSE) or "mad cow disease" scare in the United Kingdom resulted in not only a crash in beef demand within the U.K., but also a drop in consumption elsewhere in Europe and even the United States (Jasanoff 1997).

Seemingly local in nature, food scares may have international consequences. These consequences generally outlast public attention.

The fifth stage in Beardsworth and Keil's (2001:163) food scare model is when the public anxiety fades and a "new equilibrium" is reached regarding the risk factor. In climate where news media depend upon a continuous cycle of fresh headlines, food scares are somewhat faddish and generally fade with little fanfare (Macintyre, Reilly, Miller, and Eldridge 1998). Despite fading as quickly as they appeared, Beardsworth and Keil (2001) point out that "low-level anxiety may persist, and can give rise to a resurgence of the issue at a later date" (p.163). Research by Stuart (2007) highlighted that food scares involving the same food items and the same contaminants can reoccur and likely will reoccur despite attempts by agrifood companies to control safety. As a "natural" product, most foods are raised in bacteria-rich environments and thus subjected to variables that are difficult to control (e.g. feces or urine of wild animals like rats or birds). This problem has plagued spinach and other leafy greens which have faced repeated food scares (Stuart 2007). Other food scare events are less frequent or perhaps never repeated as the nature of the risk factors are much easier to control. The ban of Alar by the U.S. Environmental Protection Agency, for example, ensured that apple growers halted their use of the chemical and thus it has faded from consumer consciousness (Hermann 1997). Beardsworth and Keil (2001) highlighted that in this fifth stage demand for products at the center of a food scare can return. The feasibility of the products return, however, is often dependent upon the "durability of the public concern" (Beardsworth and Keil 2001:166) over the product and the "appeal of" or

availability of substitutes. Because it is not an absolute requirement for successful apple production, consumers will probably never miss Alar.

While Beardsworth and Keil's (2001) food scare model provides a beneficial heuristic device for understanding the stages of most food scares, it is important to recognize the diversity and complexity of food scares. Food scares can drastically differ from one another along the details of any given stage of the Beardsworth and Keil's (2001) model. Within the second stage of the food scare model, for example, the 2012 LFTB food scare strays from the classic examples of past food scares. Though contamination, both through inadvertent and deliberate means, and the risk of illness (either from acute or chronic exposure) is often the source of anxiety behind most food scares, the 2012 LFTB food scare presents a unique case in that no consumers were sickened or appeared to be under the threat of physiological harm from consuming the product. This difference between the 2012 LFTB scare and other past food scares represents the diversity of food scare events as well as one reason among many why food scares deserve the attention of food and agriculture scholars.

Why study the 2012 LFTB food scare?

Controversies like the 2012 LFTB food scare are important moments for the analytical attentions of sociologists of food and agriculture. David Goodman (1999), Stassart and Whatmore (2003), Beardsworth and Keil (2001), and other scholars (Delind and Howard 2007; Donaldson, Lowe, and Ward 2002) argue that food scares deserve examination for three important reasons: 1) food scares unravel relations of previously punctualized sets of actors thus providing a crevice into which scholars can drive an analytical wedge, 2) food scares are understudied in terms of their networked nature, and

3) though seemingly brief, food scares can have tremendous consequences for the ordering of agrifood networks, including new alternative orderings resembling a move away from modern industrial rationality.

"Hot Situations"

According to Stassart and Whatmore (2003), food scares are the paragon of what Michael Callon (1998) deems "hot situations" or "hybrid forms" in which "everything becomes controversial [in] the absence of a stabilized knowledge base" (p.260). During food scares the dominant forms of knowledge and production become interrupted, destabilized, and even translated into new arrangements (Goodman 1999; Stassart and Whatmore 2003). The questioned item of consumption at the center of food scares is simultaneously an avatar for the contestation of the modern industrial rationality upon which the item and the network ordered around it are based. For those actors attempting to arrange new orders of an agrifood network, food scares are thus opportunities for them to establish their new orderings (Stassart and Whatmore 2003).

Through their study of food scares impacting the beef industry in Belgium, Stassart and Whatmore (2003) revealed that food scares often open agrifood networks to alternative orderings. The beef scares examined by Stassart and Whatmore (2009) created spaces within which agricultural cooperatives could establish new locally-based orderings of beef production and consumption. Other research by DeLind and Howard (2008) examined similar repeated food scares involving contaminated fresh, bagged spinach within the United States. DeLind and Howard (2008) used the spinach scares as an opportunity to examine the contamination risks accompanying large-scale, centralized

processing of spinach, and to suggest alternative small-scale, decentralized production and processing. Both studies by Stassart and Whatmore (2003) and DeLind and Howard (2008) also highlighted the utility of food scares in their exposure of the previously obscured actors populating the agrifood networks in which the questioned food items are couched. Goodman (1999) proposed that food scares "expose hybrid mediations inscribed on 'food'" (p.29) making the actors in agrifood networks more visible for the analytical gaze of any food scholar willing to look (Goodman 1999). Like Stassart and Whatmore (2003) and DeLind and Howard (2008), Goodman (1999) also advocated that scholars utilize this vantage point provided by food scares in order to explore the possibilities of alternative orderings. Unfortunately, the insights provided by these food scholars into the relational exposures of food scares are reflective of a sparse body of literature relative to other food controversies like genetically-modified foods, raw milk, and sub-therapeutic antibiotic use in animal agriculture. Furthermore, much of the literature on food scares is reflective of a production-consumption viewpoint that views scares as resulting from either failures of producers or consumers with little consideration of anything in between.

Beyond "production-consumption"

Despite the opportunities for network analysis offered by food scares, much of the food scare literature focuses heavily within the realm of responses to scares by producers (production) or consumers (consumption). Concerning production, research within the area of organizational responses to food scares is populated by studies that evaluate responses to scares in order to craft better public relations and marketing strategies during these times of organizational crisis (Carroll 2009; Gellynck, Verbeke, and Vermeire

2006; Johnson and Peppas 2006). In juxtaposition to the use of food scares for exploration of alternative food system orderings, as offered by DeLind and Howard (2008) and Stassart and Whatmore (2003), the body of production-focused research examines new ways to further entrench modern industrial orderings of the food system via improved management techniques (Caswell 2006; Gellynck, Verbeke, and Vermeire 2006) and/or marketing strategies (Carroll 2009; Johnson and Peppas 2006).

In addition to various studies focused on the production impacts of food scares, another contingent of studies focused primarily on consumer responses to food scares (Böcker and Hanf 2000; Nayga 1996). Nayga (1996) examined the sociodemographic factors correlated with anxieties about food safety and concluded that nonmetropolitan residents with higher education were less anxious about hormones, pesticides, and other industrial food production technologies. Nayga's (1996) thus explained consumer concern as at least partially tied to a lack of consumer education. As Nayga (1996) explained, "Most scientists and professional experts, however, agree that such concerns [with safety of the food supply] are, for the most part, unjustified and may be a reflection of consumers' unfamiliarity with the technical or scientific aspects of the production process and of negative publicity from the media" (p.473). In their study of consumer responses to food scares, Böcker and Hanf (2000) address concerns of a consumer knowledge deficit regarding industrial production techniques and suggest that producers "target their information strategies" to protect "against loss in trust" (p.480). Again, similar to research focused on the impact of food scares on production, the attention of these studies primarily concentrated on the consumption "end" of the agrifood network

with food anxieties related to a need for agrifood industry to "target consumer education programs" (Nayga 1996:473) rather than reorder practices.

Apart from conceptualizing food scares as the result of producer failings (e.g. poor management, lack of information communication to consumers) or consumer knowledge deficits (e.g. lack of modern food production knowledge), Goodman (1999; 2002) and other scholars (Adams 1997; DeLind and Howard 2008; Stassart and Whatmore 2003) argued for an analytical turn that moves beyond a dichotomous production-consumption focus. From this perspective, the emergence of food scares are not uncovered solely through examining producer or consumer responses, but instead through an investigation of how the networks are ordered. Carol Adams' (1997) ecofeminist critique of the 1996 mad cow disease scare in the U.K., for example, moves beyond criticizing producers for their safety practices or consumers for their inadequate understanding of risk and sees the issue as resulting from the anthropocentric ordering of the agrifood system. Adams' (1997) critique is that meat consumption itself is an issue worth revisiting as it gives rise to the oppression (e.g. confinement, growth hormone injections) of animals to fulfill the increasing demands of a diet centered on the practice of consuming their flesh. The solution, according to Adams (1997) is to "restore the absent referent [animal subjectivity], not consumer confidence" and to "end the practice [of meat-eating], don't protect it" (p.44). Adams' (1997) analysis was thus a radical shift away from the production-consumption analytical dichotomy. This study of the 2012 LFTB food scare aims to continue this analytical shift and examine the scare not from the production-consumption dichotomy reflective of the studies dominating food scare literature, but through investigating the ordering of the LFTB agrifood network itself.

Impacts of Food Scares

Finally, controversies like the 2012 LFTB food scare also deserve the attention of food and agriculture scholars because they often have lasting impacts on food production, consumption, and policy (Donaldson et al. 2002; Freidberg 2004; Hermann, Warland, and Sterngold 1997; Stassart and Whatmore 2003). While the scares themselves are temporary events in consumer consciousness and news media broadcasts, the altered orderings of the agrifood networks affected by food scares are more permanent. Because of the agrifood chains are networks, changes resulting from food scares are also networked and thus have impacts beyond the food item posing (or perceived as posing) a risk to consumers. Three of the most famous food scare examples serve to illustrate the impacts of food scares: the Alar food scare of the late 1980s, the Jack-in-the-Box food scare of the mid 1990s, the more recent 2001 foot-in-mouth disease outbreak in the United Kingdom. Though these scares all resulted in networked-effects beyond the localized food item or company involved, only the examination of the foot-in-mouth disease outbreak by Donaldson, Lowe, and Ward (2002) uncovered the practices through which network-building actors established these new orderings.

During the mid-1980s, the Environmental Protection Agency (EPA) conducted a risk assessment to investigate possible health impacts of the popular agricultural chemical Alar (Hermann 1997). Alar, the brand name of the chemical daminozide, was a popular chemical used to delay ripening of apples and was suspected by the EPA and others as producing carcinogens as the product broke down (Hermann 1997). The panel commissioned to conduct the risk assessment ultimately concluded that the amount of Alar exposure necessary to pose any risk to human health was much too great to take any

action (Hermann 1997). Despite these findings, in 1985 the EPA lowered tolerance levels for daminozide in apples by about 33 percent (Hermann 1997). Following this decision, a publication by the National Resource Defense Council (NRDC) targeted Alar as posing significant carcinogenic concern based upon the animal studies conducted by the EPA and the use of Alar on a food popular with children, apples (NRDC 2011). In conjunction with the release of the NRDC study, a segment covering the content of their report was featured on the popular nightly news program *60 Minutes* (Hermann 1997; NRDC 2011). Pending the *60 Minutes* segment, the Alar debate developed into a national food scare when various other media outlets began to focus on Alar and the NRDC report (Friedman, Villamil, Suriano, and Egolf. 1996) Soon both immediate and irreversible changes occurred to the apple agrifood network and policy (Friedman, Villamil, Suriano, and Egolf. 1996; Hermann 1997).

The Alar scare had two significant impacts within the apple agrifood network: 1) an immediate reduction in the demand for apples, and 2) an EPA ban on the use of Alar in food products. The reduction in demand for apples had immediate negative impacts upon apple growers, companies that processed apple products, and the retail businesses selling apples and apple products (Hermann 1997). Additionally, since Alar was used as a harvesting and storage aid to keep apples from ripening too quickly, the EPA ban on the use of Alar translated to changes within the apple industry regarding the harvesting and storage methods of apples (Hermann 1997). Though EPA studies found no evidence of immediate danger for the product, it is clear that the Alar scare had significant impacts on policy and the ordering of the apple agrifood network.

Unlike the murky health implications of the Alar scare, the 1993 U.S. Jack-in-the-Box food scare had immediate negative impacts upon the physiological wellbeing of consumers. Due to the large scale of the outbreak and the severity of the health consequences to consumers, journalist Jeff Benedict (2011), who wrote an extensive book investigating the scare, referred to the scare as "far and away the most infamous food poison outbreak in contemporary history" (Denn 2011). Outside of the scope of the outbreak and severity of health outcomes, the scare also caused significant changes to the ground beef agrifood network. One such policy change was by the United States Food and Drug Administration (FDA) who altered the cooking temperature requirements of restaurants serving ground beef products (Benedict 2011). As a result of the Jack-in-the-Box scare, the required internal temperature for cooked ground beef products served by food retailers was raised from 140 degrees Fahrenheit to 155 degrees Fahrenheit in order to reduce the risk of consumers contracting foodborne illness from pathogenic bacteria like E.coli (Benedict 2011; FDA 2011). Despite criticisms from industry, the USDA's Food Safety and Inspection Service also introduced new labelling requirements for safe handling of ground beef (Detwiler 2014). Perhaps one of the most significant changes, however, was the move by the USDA to legally classify E.coli as an "adulterant" and thus adopt a "zero-tolerance" policy for the presence of E.coli in ground beef prior to leaving processing facilities (Frame 2013). The USDA move to classify E.coli as an "adulterant" translated to significant changes in the orderings of the regulatory system as it related to ground beef, but also for any processor for which there is a danger of E.coli contamination (Frame 2013). The relatively quick, seemingly localized event of the 1993

Jack-in-the-Box food scare thus had ramifications that rippled throughout the agrifood system and impacted the orderings of multiple different agrifood networks.

One of the most recent food scares spawning major changes for the ordering of agrifood networks, at least related to livestock production, was the 2001 foot-in-mouth disease epidemic that occurred in the United Kingdom (Donaldson et al. 2002). Foot-in-mouth disease (FMD) is a virus that causes fevers, blistering, and, if untreated, physical debilitations in the host organism (Donaldson et al. 2002). The disease mainly affects livestock, but it can, in rare cases, infect human hosts as well (Donaldson et al. 2002). The "scare" from the presence of FMD in English livestock thus came not solely as a possible impact to humans, but also from its ramifications for the health of the livestock industry. Donaldson et al. (2002) studied the process by which the FMD virus spread through enrolling other actors and the ramifications the scare had upon the rural U.K. economy. Donaldson et al. (2002) found that the spread of the virus was made possible by the way in which the FMD virus could take advantage of the normal order and practices of the livestock production network. After the FMD virus successfully enrolls a host, the virus then produces blisters on the host's mouth and feet (hooves) where the virus reproduces and eventually spreads throughout the environment (e.g. pasture, barn, feeding/water trough, etc.) when the blisters burst (Donaldson et al. 2002). Donaldson et al. (2002) found that the virus could attach to tools (e.g. tractors, shovels, troughs, trucks) and then transmit across hosts via the mobility of 21st century livestock production. If a truck moving livestock from farms to processing facilities is not sanitized in a way that is unfavorable for its enrollment by FMD, it will thus be a perfect vehicle for the disease to expand its network and enroll geographically-dispersed hosts (Donaldson et al. 2002).

Donaldson et al. (2002) laid out that it was this rapid spread of the virus (and the ease of which it could do so) that ultimately led to a reordering of the network by network-building actors (e.g. Ministry of Agriculture, Fisheries, and Food). This reordering included immediate massive slaughter of infected or suspected infected animals and a halt to exports and movements of livestock within and outside of the U.K. (Donaldson et al. 2002). In this particular scare, the reordering of the livestock production network in the U.K. had longer-lasting external impacts upon the rural U.K. economies that dependent upon tourism as a significant portion of their economy (Donaldson et al. 2002). Media images of the quarantine zones and the "mass burial and funeral pyres" stemming from the mass slaughter of livestock negatively impacted the perception vacationers had of a rural country holiday and stoked fears of human FMD infections (Donaldson et al. 2002:208). These negative economic impacts were not only felt within areas where the FMD virus was present, but throughout the English countryside (Donaldson et al. 2002). Clearly this was one more scare with consequences beyond the temporal and geographical boundaries of the scare.

Although not always observed as such (as in Donaldson et al. 2002), the literature covering these three significant food scares (Alar, the Jack-in-the-Box scare, and the FMD scare) demonstrates the degree to which food scares are a networked-effect. Though these scares had seemingly-localized fallout in their immediate impacts (e.g. illnesses, decline in consumer demand for the risk-associated product), they are events with consequences stretching beyond their immediate temporal and geographical boundaries. While scares that impacted ground beef regulation translated to new E.coli standards for other fresh proteins (e.g. chicken, pork), the FMD virus scare had economic

effects on the rural U.K. stretching beyond the time it took to slaughter the animals and the communities where the virus was actually present. This is why food scares, including the 2012 LFTB food scares, deserve the attention of food and agriculture scholars. Understanding food scares provides us a way to understand the processes through which they produce significant impacts upon the order of agrifood networks. And as Donaldson et al. (2002) demonstrated with their discussion of the FMD scare's impacts on rural tourism, gaining these insights might also help to make better policy decisions in order to refrain from inadvertently causing more harm in the name of safety. Donaldson et al. (2002) also revealed that when analyzing the networked nature of food scares, it is important to follow all actors – human and nonhuman. To understand more fully the emergence, manipulation and outcomes of food scares, food and agriculture scholars are beginning to utilize Actor Network Theory as both theory and method.

Actor-Network Understanding of Food Scares

> In terms of actor-network theory, food scares expose the hybrid mediations inscribed on 'food,' and invite us to 'follow the actors' in the translation process as hybrid collectives are reconstituted (Goodman 1999: 29).

As suggested by David Goodman's (1999) quote above, actor-network theory just as much a method as it is a theoretical approach to thinking about networks and relations. ANT provides a blueprint for analyzing the mechanics of power through which networks come to fruition and, simultaneously, experience, overcome, and/or succumb to resistance and thus reconstitute into new fields of relations (Goodman 1999; Latour 2007; Law 1992). In fact, ANT founders like John Law, Bruno Latour, and Michael Callon press for the methodological usefulness of ANT over a focus on its use as theory (Venturini and Guido 2012).

Latour held that ANT "far from being a theory of the social…always was, and this from its very inception, a very crude method to learn from actors without imposing an a priori definition of their world-building capacities" (Law and Hassard 1999:20). Here Latour echoes other ANT theorists' concern with using theory to impose already pre-established explanations for the activities of social actors. ANT "does not flee from generalization" (Venturini and Guido 2012:2), but "claims that speculations must follow data and not the other way around" (2). These methodological principles of ANT place it most closely within the realm of Garfinkel's (1967) ethnomethodology and Glaser and Stauss' (1999) grounded theory. Similar to ethnography, the emphasis of an actor-network analysis is on practices of actors or their "everyday actions, activities, and behaviors" (Nimmo 2011:113). The primary way in which ANT diverges from ethnography, however, is in expanding the definition of "actors" to include nonhumans and considering the agency of nonhuman actors within any given network. ANT suggests that the researcher "follow the actors" as they "deploy their networks" as this is all one "needs to know about sociology" (Venturini and Guido 2012:2). Previous studies utilizing ANT demonstrate that one way to 'follow the actors' through the process of translation is to seek out and examine their practices.

The body of research employing the methods of ANT, especially in the areas of agrifood studies, remains relatively small. With the urging of ANT proponents like David Goodman (1999), however, a growing body of agrifood research utilizing the methodological approach of ANT has emerged. One of the few studies using ANT to examine food scares, Donaldson et al. (2002) followed the "chains of heterogeneous associations that led from a virus to a disease, from a disease to a collection of crises, and

from those crises to institutional change" (201) in their study of the 2001 FMD scare in the United Kingdom. The FMD study by Donaldson et al. (2002) examined the practices of a variety of actors including the FMD virus, livestock, agricultural technology, farmers, and government regulators, and how these associations ultimately made irreversible impacts to rural communities in the UK. Additionally, Donaldson et al. (2002) highlighted the way in which an ANT study might employ a temporal dimension to an ANT analysis as they followed the FMD scare using a timeline from the contraction of the disease to the diagnosis in the first animal all the way through the crisis. This said, one issue with the Donaldson et al. (2002) study was the lack of specificity regarding how they collected their data. It is unclear whether Donaldson et al. (2002) utilized interviews, news media coverage, government publications, or some combination of these data sources to build their analysis. When following the actors utilizing an ANT methodological approach, other researchers were much more explicit in their data sources.

Similar to the approach of this analysis, other researchers within the area of agriculture and food studies followed the practices of actors. Much of this past research was aimed at understanding farmer agency through examining the actor-networks within which farmers make decisions regarding cropping practices. Researchers from Switzerland (Schneider, Steiger, Ledermann, Fry, and Rist 2012) and the United States (Coughenour 2003) utilized ANT to examine the adoption of no-till cropping by farmers. Both of these studies utilized interviews with farmers and other key informants to investigate the process by which no-till practices (a.k.a. conservation tillage) were adopted. While Coughenour (2003) and Scheider et al.'s (2012) studies both found

adoption of no-tillage a 'network-effect' vs. some "individual creation" (Coughenour 2003:298), this study is most heavily influence by the latter study which viewed the adoption of no-tillage via ANT's process of translation. Especially influential to this study was the way in which Schneider et al. (2012) operationalized the problematization phase of the translation process through which "focal actors" (i.e. primary network-building actors – in their case farmers, scientists, and extension agents) laid out the problems and solutions concerning the adoption of no-till practices. Schneider et al. (2012) demonstrated that various problematizations concerning the same practice (no-tillage) are possible. However, in Schneider et al.'s (2012) case, the network-building actors were portrayed as relatively harmonious and cooperative in their agendas, while in this study controversy and conflict are common denominators.

From the subtherapeutic use of antibiotics in swine production to the wide-ranging debates over genetically modified foods (GMOs), contemporary agriculture and food studies are painted with controversies over practices. Many of these controversies involve some overarching theme of "sustainable" or "alternative" versus "industrial" or "conventional" agricultural or food production practices. Gray and Gibson (2013) explored the industrial vs. alternative/sustainable debate through examining the practices of conventional operators in the face of sustainability concerns such as drought, soil degradation, climate change, etc. Through conceptualizing farmers as actor-networks and following them through the translation process via interviews, Gray and Gibson (2013) found that farmer identities and practices were networked-effects and thus not completely individualized phenomena. Gray and Gibson's (2013) findings were influential to this study when tracing the relations of the network-building actors in the

2012 LFTB food scare. In addition to further solidifying the networked reality of agency, it also provided a way for me to conceptualize the *network* within which actors are making their decisions. Gray and Gibson (2013) viewed the decisions of the farmers *not* to adopt certain conservation practices as reflective of their relations within the industrial actor-network they were couched – a similar discussion follows in the analysis section of this study.

CHAPTER THREE
- Theory and Method -

Theory

The study of food scares occupies a relatively meager niche within the area of agro-food studies. Most studies examining food scares were conducted in Western Europe and focused primarily on consumer perceptions and reactions, public relations, or some combination of these facets (Böcker and Hanf 2000; Jackson 2010). Additionally, nearly all studies confine their focus to one or a small set of, usually human, actors within an agrifood network (e.g. consumers, regulatory bodies, processors, producers). Through failing to consider the hybrid nature of agro-food systems in that they are comprised of both non-human (e.g. microorganisms, machines, chemical processing agents, cattle) and human actors (e.g. farmers, industry personnel, consumers), previous approaches to studying food scares are weakened as they neglect the agency of the conceptually distanced 'natural' actors (Goodman 1999).

An actor-network theoretical (ANT) approach to understanding agro-food networks avoids narrow nature-culture/social-human dualisms through rejecting categorical notions of 'nature' and 'society' (Goodman 1999; Latour 1993). From the perspective of ANT, no actor is either (or some level of) *natural* or *social* as no actor is able to act without embodying the intersection of relations between these mistakenly separated dimensions (Latour 2007). This unique conceptualization of actors, according to Goodman (1999:25), makes ANT an appropriate approach for achieving more comprehensive understandings of agro-food networks since they are a highly visible example of the heterogeneous associations of hybrid actors, or actor-networks, the

"central analytical metaphor" of actor-network theory. Furthermore, ANT's methodological approach to tracing the formation, resistance, and reconstitution of relations within actor-networks places it in a unique position to understand those that occur in the event of food scares (Goodman 1999). Prior to this examination, however, it is important to first understand how ANT conceptualizes the issues of *agency* and the *social*.

While within sociology the idea of agency is often conceptualized as an *a priori* characteristic of individuals, roles, and/or groups, actor-network theory conceives of agency as the actions of actors in relation to other actors (Latour 2007). Thus agency is not some *a priori* category, but an emergent property of actors only attributable through the interactions comprising their relations with one another.

Actor-network theory also extends this concept of agency non-human actors. The social, according to actor-network theory, is not some supposed "thing" embodied in any particular entity or role, but instead exists as associations and the continuous actions involved in forming, maintaining, renegotiating, and dissolving them. This building of relationships and, consequently, networks does not occur in a vacuum since every actor requires engagement in relations with other actors, both human and nonhuman, for an action (an exercise of agency) to occur (Latour 2007). While often void of conscious consideration regarding the actors involved, eating is a fitting example of the way in which action requires relations of heterogeneous actors comprising an entire agro-food actor-network (e.g. farmers/operators, regulatory actors, tractors and other technology, microorganisms, cattle, wholesalers, retail stores, marketers, televisions, and many more).

Without the associations of these diverse actors (the 'social'), the action and, consequently, agency is rendered impossible.

Although a rather generic description of an agrifood actor-network, this example illustrates the point that agency is impossible without relationships to other actors (human or otherwise) and allows us to peer inside a network normally rendered visible only by inputs (e.g. producers raising food) and outputs (e.g. food on the grocery retailer's shelves) of the complex hybrid actor-network involved (and even these are somewhat opaque). The visibility of these heterogeneous actors and their associations, however, is progressively concealed as their relations tighten and agendas increasingly converge. Any breakdown or resistance in the routine operations and suddenly other actors in the network are exposed.

As the goals of actors congeal and persist, their convergence or the "increasing agreement between the agendas of all actors in a network" (Donaldson et al. 2002) form routine and unquestioned associations so tightly bound that the end-result is the appearance of a network consisting only of inputs and outputs with little clarity of the action or actors in-between. When this happens actor-networks are said to become "blackboxed" in that associations are so routine and unchallenged that they are rendered invisible. Additionally, according to Callon (1991), these interconnections between actors may grow so tight and routine that a return to earlier phases of relationships between actors is questionable and possibly 'irreversible' to a certain extent (Donaldson et al. 2002).

This irreversibility becomes apparent when previously blackboxed actor-networks become "reopened" through conflicts and controversies causing resistance of once tight

relationships within the network (Latour 1987). Following these controversies can reveal the associations, agendas, and conflicts found within actor-networks and provide better understanding of the 'translation' "process by which actors form associations with other actors and actor-networks come into being" (Donaldson et al. 2002:205). Food scares are essentially the products of controversies from which blackboxed agro-food networks are reopened.

Reopening the Blackbox

> It's my hypothesis that the individual is not a pre-given entity which is seized on by the exercise of power. The individual with his identity and characteristics is the product of a relation of power exercised over bodies, multiplicities, movements, desires, forces (Michel Foucault 1980:74).

Beardsworth and Keil (2001) identified the first stage of a food scare as a state of equilibrium during which the public is unaware of any potential risk presented by a particular food item or practice located somewhere along an agro-food chain (Table 1, p.14 in this document). This stage is characteristic of the "blackboxed" or punctualized network at which point an actor-network is recognizable only by inputs and outputs while the actors and their actions within remain obscured.

While the punctualized actor-network achieves a seemingly monolithic stature, the event of a food scare demonstrates that the power held through the converged relationships within the actor-network is not, as Michel Foucault elucidated in the above quote, attained through an autonomous exercise of strength. The strength and durability of the seemingly "macrosocial" system are generated through and dependent upon establishing successful (defined as those necessary to serve the ends of the network-building project) relations and interactions between heterogeneous actors at a "microsocial" level (Law 1992). This illustration highlights the central charge of an

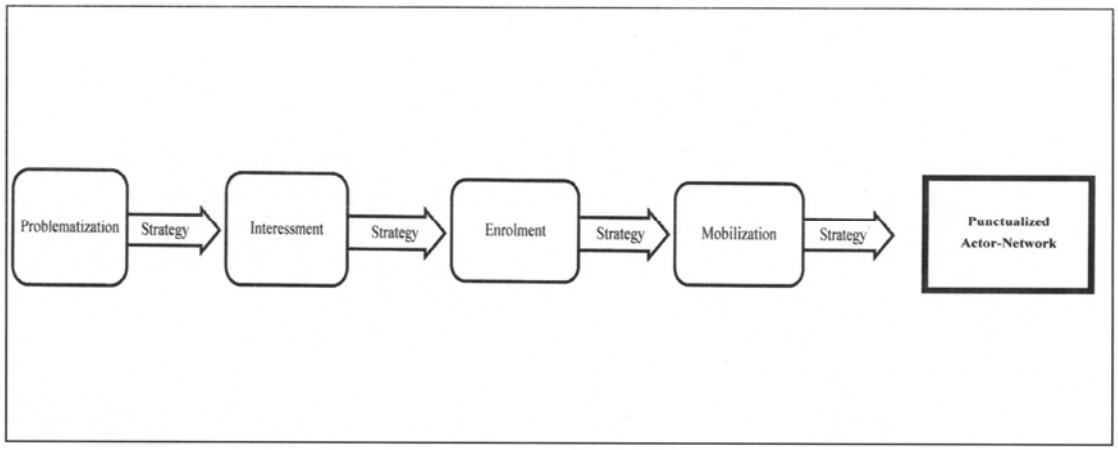
actor-network approach, the exploration of the "mechanics of power" or "how, in other words, size, power or organization are generated" (Law 1992:380). Thus within the context of the proposed research, the cornerstone of inquiry is an exploration of how the LFTB actor-network built the heterogeneous associations which came to appear as a "single-point actor" (Law 1992:380) and, embodied by the 2012 LFTB food scare, experienced a shift away from its previous state of equilibrium as resistance to the food product grew and made seemingly irreversible alterations to the network and its previous trajectory. In order to begin these inquiries, however, it is first necessary to define the translation process through which actor-network theory maps these experiences.

Food scares are essentially the reopening of blackboxed agro-food actor-networks revealing the "hybrid collectives in which daily food habits and practices are enrolled" (Goodman 1999:29). Ultimately, blackboxing is an advanced part of the 'translation' "process by which actors form associations with other actors and actor-networks come into being" (Donaldson et al. 2002:202).

As displayed in Figure 1, the translation process involves four stages or "moments" as referred to by Callon (1986:1). First, problematization is "the stage where the network-building actor sets its agenda, designates the other actors it needs to help it and defines their roles" (Donaldson et al. 2002:202). Second, interessment is a series of processes by which the first actor presents its agenda in a way that ensures the roles it has set for other actors so that the "second actor might allow itself to be represented by the first" (Donaldson et al. 2002:202). Third, enrollment is an association arises in this stage when the second actor 'agrees' to the first actor's agenda. Last, mobilization is the final stage at which enrollment is "transformed into active support" signifying that "a

constraining network of relationships has been built" (Callon 1986:218). However, as in the case of agrifood actor-networks in food scares, this "consensus and the alliances which it implies can be contested at any moment" (Callon 1986:219). Translation is a continuous process, the stages of which might occur between any number of actors within the network at any time. Additionally, activities supporting moments of translation include a variety of strategies or "methods of overcoming resistance" (Law 1992:387) which help maintain certain trajectories or agendas desirable by network-building actors.

Figure 1. The Translation Process



While Law (1992) characterized the strategies of translation as "contingent, local and variable" (p.387), he also outlined four general areas where relations are strategized (the arrows in Figure 2). First, actors may invest in certain network relations to establish *durability* of the actor-network or persistence over time. Durability, according to Law (1992), is difficult to maintain simply through thoughts and speech. More durable are *performed* relations, such as when interactions are formally defined or built into particular roles (similar to Weber's idea of formal rationality).

Also rather durable, especially when effectively situated amongst a network of relations, are the embodiment of relations in "inanimate materials such as texts and

buildings" (Law 1992:387). This is when relations are not only built into a role, but also exist materially (e.g. mission statements and/or standard operating procedures in an employee handbook, specialized tools or equipment, uniforms). Apart from persistence across time (durability), another strategy of translation concerns "ordering through space" (Law 1992:387) or *mobility*. Mobility involves the "materials and processes of communication" (Law 1992:87) (i.e. writing, social networks, rallies, monetary donations, websites, television advertisements) which allow actors to act at a distance thus policing the center and periphery of the actor-network.

A third strategy of translation with which actor-network theory is concerned is the degree to which actors "anticipate the responses and reactions of the materials to be translated" (Law 1992:388) thus attempt to order relations in a network in such a way that they can "contain the resistance that would dissolve them" (p.388). Last, the scope is a strategy of translation itself (Law 1992:388). While Law (1992) argued that this is most often local or from a centralized network-building actor, he also mentions that this activity may take place from periphery to center or perhaps from anywhere throughout the network as it is an effect of relations/interactions and if a location is indeed determined, this is only because there is a center with which to compare it. The key research questions of this research are derived directly from the stages of translation and the strategies by which actors within the LFTB actor-network adopted to establish their desired orderings of the LFTB network during the 2012 LFTB food scare.

Methodology

At its core, this study is an analysis of discourse where "discourse" is conceptualized as the "set of meanings embodied in metaphors, representations, images,

narratives, and statements that advance a particular version of 'the truth' about objects, persons, events, and the relations between them" (Long as cited in Wright and Middendorf 2008:75). Specifically, guided by ANT, actors were followed through their process of translation to reveal how discourses were performed and materially embodied through the enrollment of particular actors, certain narratives, communicative techniques (i.e. ordering of language), and other strategies used by BPI and ABC News to order the LFTB network. Following the actors involved an examination of their practices via a qualitative content analysis of 18 YouTube videos produced by Beef Products Incorporated (See Appendix B) and 14 video broadcasts from ABC News (See Appendix C). These videos were transcribed and coded using qualitative analysis software from QSR International, NVivo. Though special attention was paid to identities of actors, their relationships with one another, and their framing of LFTB, data was open-coded following the methodological guidelines of ANT.

Qualitative Content Analysis

This study utilized a qualitative content analysis of 18 videos released by BPI and 14 ABC News video broadcasts during the 2012 LFTB food scare. Though not without its limitations, there are two important reasons for this method of data collection: 1) it coincides with ANT methodology, 2) it adds to the ways in which ANT is deployed in sociological research, and 3) video was a significant medium used by network-building actors to order the LFTB actor-network.

Qualitative Content Analysis and ANT

Qualitative content analysis is a method highly congruent with the methodological mission of actor-network theory in three important ways: 1) a shared emphasis on context, 2) the agnosticism of the analyst, and 3) the goals of the study are not to establish some objective reality of a given situation. Quantitative content analysis focuses on reconstructing texts into numerical form in order to examine frequency or other measurements of phenomena. In contrast to quantitative content analysis, the primary goal of qualitative content analysis is to reconstruct *context* by taking into account the context of the subjects, considering the multiple meanings of the texts, and placing a greater emphasis on latent content or that which does not readily appear in the text (Kohlbacher 2006). "Context" to ANT is usually expressed in relational terms and thus reconstructing context in this ANT study involved examining the practices through which actors related to one another in an attempt to order the network according to their specific agendas. Additionally, as Cassell and Symon pointed out, qualitative content analyses are "less likely to impose restrictive a priori classifications on the collection of data" and are thus more driven by "emergent themes and idiographic descriptions" versus "specific hypotheses and categorical frameworks" (1994:4). These characteristics of qualitative content analyses echo the wariness of actor-network theorists to approach cases with some predetermined understandings or categorizations of actors' practices (Law and Hassard 1999). Latour (2007) envisions the ANT analyst as the proverbial "fly on the wall" (136) whose job it is only to describe the action taking place and to not take a "free ride" (137) by constraining the actors within some preexisting "social structure" or other abstract force. Finally, qualitative content analysis is also an appropriate method

for building knowledge when not attempting to uncover some "clear-cut objectivity or reality" (Kohlbacher 2006). This is an analysis of controversy. It is not the goal of this ANT analysis, and Latour (2007) might well say any ANT analysis, to reveal some "objective facts" in the sense of vindicating a particular actors' account of "what *really* happened" in the controversy. Coinciding with the constructivist tradition of a qualitative approach, ANT recognizes that "meaning emerges from interaction and is not standardized from place to place or person to person" (Rubin and Rubin 1995: 31). There are multiple realities regarding "what really happened" during the 2012 LFTB food scare. The goal of this study is to identify these discourses and unpack the strategies through which the network-building actors, BPI and ABC News, supported them. In using a content-analysis to accomplish this goal, the study is also adding to the ways in which ANT has been deployed.

Building ANT Methodology

While the use of ANT has gained some traction in food and agriculture studies, few examples exist of research conducted using content analysis. The closest known example is Richard Nimmo's (2011) documentary historiography of the socio-material history of milk in the US. Similar to Nimmo's (2011) study, texts, in the form of transcribed video narratives, were also an important source of data. Nimmo argued that ANT "offers a distinctive way of seeing texts" as "relational inscriptions embedded in hybrid networks which they help to assemble" (2011:116). Texts reveal relations within networks as they often act like a glue working to bond a network in a certain order. According to Nimmo, the goal of the analyst is to trace "what kinds of relations the texts are performing into being, what sorts of actants they are enrolling and what purifications

they are inscribing" (2011:116). Utilizing videos allows this analysis to expand beyond an examination of texts to consider how imagery, tones of voice, and even the editing of videos are sources of data providing information about how actors attempted to order their networks. In addition to texts, the other sources of data provided by videos are also "vital conduits for the very processes of network assemblage and mediation taking place" (Nimmo 2011: 116). Videos were also an integral source of data for this study as they played an important role in the 2012 LFTB food scare.

Videos and 2012 LFTB Food Scare

Selecting videos as the data source for this study was highly practical since video was an important medium through which actors attempted to order the LFTB network during the 2012 LFTB food scare. While BPI did release a website, www.beefisbeef.com, and ABC News encouraged viewers to send them questions via their website, video was the primary vehicle through which both network-building actors revealed their discourse and the other actors they enrolled to support it. Perhaps obvious but nonetheless worth mentioning, it was through their video broadcasts that ABC News first exposed the use of LFTB in ground beef to viewers. Through 14 broadcasts ABC News presented their narratives and enrolled viewers, broadcasted their comments, and deployed a variety of different actors to help support their discourse. BPI also engaged those visiting their website by providing a "Resources" link directing visitors to their YouTube Channel, "Beef Products," at which 25 videos could be viewed promoting their company and their LFTB product. Through utilizing videos, the network-building actors of the 2012 LFTB food scare distilled their messages to actively communicate to viewers

or consumers the roles they hope to establish for them using various narratives and sets of actors enrolled to communicate them.

Altogether this qualitative content analysis included 32 videos with 14 videos consisting of ABC News broadcasts and 18 videos derived from BPI's YouTube Channel, "Beef Products." These videos ranged in length and content. The shortest video from BPI was a 35 seconds, while the longest video was just over 48 minutes in length. BPI's videos ranged from short interviews with key actors, to informational/educational videos designed to inform viewers about key aspects of LFTB (e.g. safety, use of ammonia, importance of innovation), to lengthy press conferences. (Appendix B provides a table summarizing the titles, dates released, and brief content descriptions of BPI's YouTube videos.) It is important to note that some videos released before the 2012 LFTB food scare were included in the analysis because they were linked to BPI's "BeefIsBeef.com" website created during the scare. BPI videos were selected from their YouTube Channel based upon the criteria that their primary focus was discussing their LFTB product. *ABC News* videos ranged in length from 30 seconds to 3 minutes of longer investigative reports. All videos were ABC News broadcasts, however, half (seven) were from their flagship program, *ABC News with Diane Sawyer*, while the remaining videos were from various ABC News programs including *Good Morning America, ABC News Nightline,* and *ABC News Money Matters*. The dates of the ABC News videos ranged from early March 2012 to the beginning of April 2012. (Appendix C serves as a guide to the ABC News broadcasts, including details about the program, broadcast dates, and brief synopses.) ABC News videos were selected based upon the criteria that LFTB was their primary focus. The videos were viewed and recorded from

the ABC News website, abcnews.com. Taken together, the videos described above represent the population analyzed in this study (See Appendices B and C for full listings).

Research Strategy

The research strategy utilized to examine the 2012 LFTB food scare is a case study. It is important to emphasize the distinction of case study as a "research strategy" and not a research *method* because case studies can utilize various methods of which this case study happens to employ a qualitative content analysis. Case study research is common and useful in ANT analyses as ANT inquiries often begin by examining local sites/interaction (Latour 2007). This is not to say that ANT studies have no interest in "global" interactions, but that for the ANT analyst all local sites are just as much "global" as they are "local" since agency is dispersed throughout an actor-network (Latour 2007). Thus case studies, whether interested in "global" or "local" affairs, are well suited to an ANT analysis as they are an "empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident" (Yin 2003:15). Boundaries of actor-networks are often "fuzzy" and difficult to establish as strands of relations can sometimes seemingly stretch to infinity. Additionally, both ANT and case studies are well suited to investigating "technically distinctive situations" (Yin 2003:15) like the 2012 LFTB food scare. The LFTB actor-network is a specific type of socio-technical arrangement, and the 2012 food scare surrounding it was a unique event when compared with other scares (e.g. nobody had been knowingly sickened from consuming LFTB, LFTB was not found through research to cause illness or disease). The unique nature of the 2012 LFTB food

scare required an equally unique research strategy and thus an intrinsic case study was pursued.

In keeping with the central research question of this study, "how did network-building actors in the 2012 LFTB food scare attempt to order the LFTB network?," the type of case study utilized was an *intrinsic* case study. The purpose of this study was not to test hypotheses or generalize findings to other food scares, but to *describe,* through the lens of ANT, the network-building activities of the 2012 LFTB food scare within the "real life context in which it occurred" (Baxter and Jack 2008:548). This places this research squarely within the category of an intrinsic case study or a study where "the intent is to better understand the case" not "because the case represents other cases," but because the "case itself is of interest" (Baxter and Jack 2008:548). While this may leave some people scratching their heads with regard to why this particular case is so interesting, the changes to public policy regarding labeling of ground beef and the choices of the National School Lunch Program are reason enough to justify inquiry.

Study Design

Equipped with the methodological principles of ANT, the design of this study most closely followed a *conventional* content analysis (Hsieh and Shannon 2005). Since a conventional qualitative analysis is "used with a study whose aim is to describe a phenomenon" when "existing theory or research literature on the phenomenon is limited" (Hsieh and Shannon 2005:1279), it is a design compatible with the goal of better understanding and describing the network-ordering process of the 2012 LFTB food scare. Additionally, when preparing to code data, researchers employing conventional

qualitative analyses avoid “using preconceived categories” and instead allow “categories and names for categories to flow form the data” (Hsieh and Shannon 2005:1279) – a process known as inductive category development. The advantage of this approach is that the “knowledge generated” is based on the actions and perspectives of the actors and thus “grounded in the actual data” (Hsieh and Shannon 2005:1280). The driving rationale for this type of research design is that the actors’ actions and their perspectives are ‘speaking’ for themselves, strengthening internal validity of the findings.

Research Procedure

Content analyzing video presents challenges for categorizing and coding data unique to the medium. Video content is multi-dimensional in both the manifest and latent content as it utilizes language in spoken-word form, language in the form of written text appearing in graphics on screen (including how the text is illustrated), tone of voice, graphical imagery (e.g. photos, animations), filming location/setting, costume/dress of persons, and title or status of persons included/interviewed in the film. These different aspects of content are difficult to account for at the onset of an analysis and require prolonged and repetitive engagement with the content. Additionally, when undertaking an ANT analysis the relations and actors involved in the network-building process are unknown and must be continuously accounted for as the analyst moves through the content. The need for repeated contact with the video content required a procedure of categorization and coding that mirrored this need. Mayring’s (2000) procedure for inductive category development (Figure 2) provided a process to meet these needs.

Following Mayring's (2000) process for inductive category development (Figure 2, p.47 in this document), the computer coding software NVivo was used to code all 32 videos (18 from BPI and 14 from ABC News). The first step in this process was to choose which videos to examine. As previously stated, videos were utilized because they were a key source of communication in the 2012 LFTB food scare and because they were the medium through which different relations and network building activities were revealed by the network-building actors, BPI and ABC News. Videos for BPI and ABC News were selected based upon the criteria that LFTB be the primary focus of the videos. The audio from these videos were transcribed verbatim using NVivo qualitative analysis software.

Several advantages were realized by utilizing NVivo for the coding procedure of this study. Perhaps the greatest general advantage of NVivo was the efficiency attained from integrating transcription, coding, and analysis within one piece of user-friendly software. Second, NVivo software allowed for efficient and detailed organization of codes ("nodes" in NVivo) including the recording of detailed descriptions of codes as well as placing them within broader categories ("classifications" in NVivo). Third, the ability to alter the names and to expand or contract definitions of codes upon the discovery of new information was important in this study. NVivo allows for a user to select and make changes to all instances of a certain code without having to move through the data code-by-code to do so. Fourth, nodes in NVivo can be color-coded and their overlap quickly examined as they place codes within the margins of text using a color-coding system. Finally, NVivo provides tools to quantify nodes, the frequency with which certain nodes overlap, and visual representations or "maps" of the relations

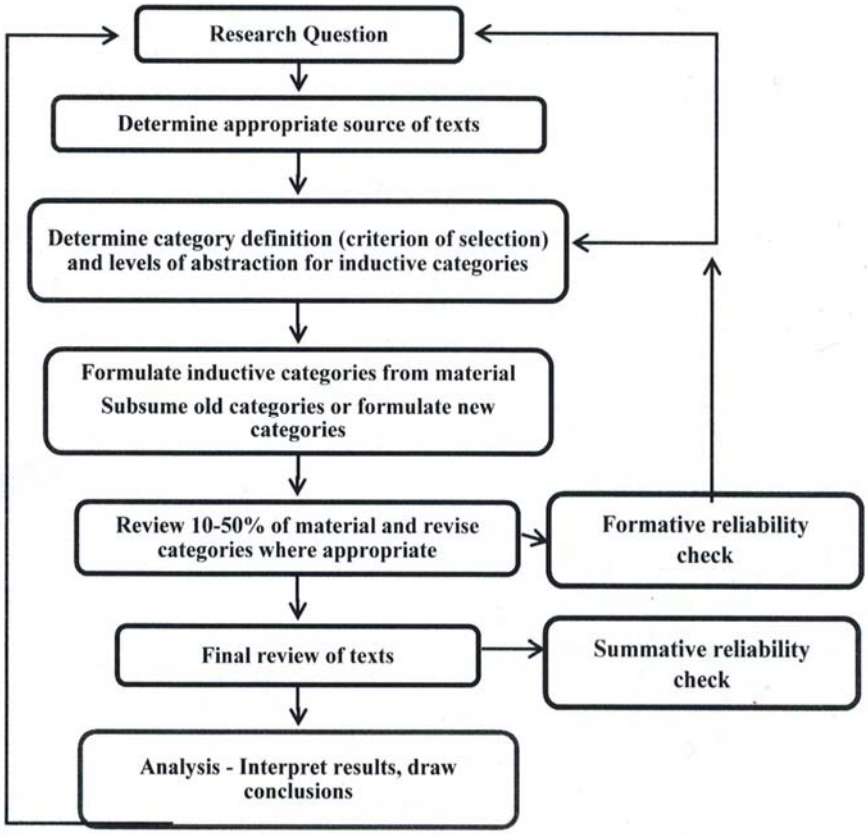
between certain codes. This permitted the visual examination of relations between certain people, themes, and other actors in the study. After selecting videos as the source of texts and NVivo as the analytical tool used to perform the analysis, it was important to think carefully about the research question informing my analysis and how they might manifest within the content.

In Mayring's (2000) model, the research question and the theoretical framework drive the development and of categories and codes examined. Furthermore, the development of codes is subject to a feedback loop as the researcher is confronted with new information and new themes emerge (Mayring 2000). This study followed the feedback loop through extensive notes taken during the transcription process as well as coding half of the transcripts, 25 percent from the BPI videos and 25 percent from the ABC News videos, and then evaluating these with respect to the research questions and actor-network theoretical framework. Revaluating the codes after analyzing 50 percent of the transcripts served as a "formative reliability check" (Figure 2, and Mayring 2000). The first step in this process was to identify the network-building actors.

Although agency is viewed by ANT as a relational effect, some actors have stronger investments in the order of their networks. These "network-building actors" are the actors around which a networks are centered and from which network-building activities stem. In this study, BPI and ABC News were identified as the network actors as ABC News was a central actor in contesting the order of the LFTB actor-network while BPI was the central actor attempting to retain its pre-food scare order. It is also important to point out that both BPI and ABC News are organizations comprised of many different actors forming heterogeneous associations all punctualized into one actor-

network. It is this punctualization, and action as seemingly single entities, which justifies the discussion of BPI and ABC News within this study as single network-building actors. After all, according to Latour (2007), all actors are at the same time networks – hence the term "actor-network." After identifying network-building actors, the next step was to follow them by locating and examining their practices in the videos. These *practices* included: 1) key narratives and problematizations of the 2012 LFTB food scare, 2) the actors enrolled by BPI and ABC News support their narratives, 3) the images and language used to communicate the narratives. Code development centered on the incidence of these practices within the transcribed videos. (See Appendix D and Appendix E for code sheets)

Figure 2. Mayring's (2000) Model for Inductive Category Development*



***Model adapted from Mayring (2000)**

The first category from which codes were derived was the key narratives and problematizations of the 2012 LFTB food scare. A problematization is when an actor defines a problem and may propose a solution to resolving the problem. As displayed in the code sheets in Appendix C and D, problematizations in the 2012 LFTB food scare primarily involved claims making regarding LFTB, BPI, ammonia, and other actors. Overwhelmingly, the codes developed from the transcripts paint conflicting claims between the two network-building actors. For example, while ABC News made claims that "LFTB is a filler," BPI countered those claims and expressed that "LFTB is not a filler." These competing frames of LFTB and of other actors throughout the LFTB actor-

network heavily influenced and populated the development of codes. Also important were the actors enrolled to support these claims/frames.

Just as important as the narratives themselves, the next step of code development included an examination of the actors enrolled by network-building actors to communicate and support the narratives. Exploring the actors enrolled by network-building actors yielded a cast of actors including academics, politicians, and special interest groups. Identifying these actors provided information about the relations making up the 2012 LFTB food scare. Additionally, understanding the enrolled actors provided information about what types of knowledge was preferenced by network-building actors as well as adding context to the fissures between their differing narratives. While it was important to identify these actors, their relations, and their narratives, how network-building actors communicated their messages was also significant.

When communicating narratives, how actors communicate a message (i.e. the language, tone of voice, gestures, or imagery they use) is sometimes as important as the text of the message itself. Qualitative content analysis encourages the analyst to reach beyond the manifest content of the words and into the latent content comprising discourse. When examining the videos, this included special attention to the imagery, language, text font, and editing utilized by network-building actors in disseminating their discourse. Mayring's (2000) procedure for inductive category development was especially important in this phase of the coding process as it encourages periodically revisiting already-coded data to improve the reliability of codes in their alignment with research questions and theoretical framework as well as their representation of both manifest and latent content. This periodic revision served as a comparative tool to

examine the framing of events as they were presented by each network-building actor through their editing, language, imagery, etc. For example, a reexamination of BPI's video of a press conference during the 2012 LFTB food scare yielded significant differences in editing when compared with the edits of the video by ABC News. This provided an impetus for further comparisons in editing of videos by network-building actors and revealed analysis likely missed sans any periodic revisiting of data. Despite the benefits of this coding procedure and the qualitative content analysis within which it was employed, some limitations of this study's methodological approach are noteworthy.

Limitations of Methodology

As with any methodological approach, there are some important limitations to this qualitative content analysis. First, using a case study research strategy along with a qualitative content analysis hinders the generalizability of findings beyond the case of the 2012 LFTB food scare. The limited generalizability of this case provides challenges when attempting to compare this case with other food scares and build coherent theory or general principals. While generalizability was not a goal of this study, it is mentioned as a limitation because the current body of food scare literature is lacking unification. More generalizable food scare studies would likely add coherence to the literature and inform response policies for government, private companies, and even universities. The second limitation of methods employed in this study stems from a lack of triangulation of coders. Using multiple coders to examine and code data would likely improve the reliability of the codes within this study. Coder triangulation in this study demands secondary coders with specialized knowledge of ANT and the translation process. Due to budget constraints, however, this was not a viable option. This limitation was somewhat

addressed through Mayring's (2000) coding procedure which stressed a continuous evaluation of category and code development. Despite these limitations, the analysis of the data yielded valuable findings reflective of the overall goals of this study.

CHAPTER FOUR
- Analysis: Discourse Coalitions -

Discourse Coalitions

The goal of this study was to identify and describe the "discursive and material resources" (Lockie and Kitto 2000:14) used by network-building actors to order relations during the 2012 LFTB food scare. This qualitative content analysis of videos released by BPI and ABC News revealed distinct discourse coalitions around each network-building actor as well as narratives circulated by each coalition reflective of their divergent discourses. Discourse coalitions included what are conceptualized as conflicting central discourses along with a number of supportive secondary discourses. The central discourse of the BPI discourse coalition ("pro"-LFTB) was largely aimed at quelling concerns about LFTB, while the ABC News discourse coalition ("anti"-LFTB) focused on raising concerns about LFTB. The two discourse coalitions utilized a variety of more specific secondary narratives (problematizations) to support their pro- or anti-LFTB positions with consumers situated as the obligatory passage point upon which the prevailing order depended. These narratives are conceptualized as arising from divergent habitus between the network-building actors, with BPI occupying what is proposed as an "agro-industrial habitus" and ABC News occupying a "moral panic" habitus. Each habitus reflects the differences in the relations BPI and ABC News has with LFTB and meat in-general. Prior to delving into the specifics of these narratives, it is important to identify actors and map the discourse coalitions forming the 2012 LFTB food scare actor-network.

Following the process of translation revealed how discourses were performed and materially embodied through the enrollment of particular actors, deployment of narratives, and communicative techniques (i.e. ordering of language, imagery) used by BPI and ABC News. This analysis yielded two central discourses along with a number of secondary discourses. *Central* as it is used here is not a claim regarding the power of the discourse as in the central discourses being the more powerful discourses. What is meant by *central* is that these discourses are broader overarching narratives which are supported by and can be observed through a number of other subnarratives. Without the support of the various secondary discourses, the central discourse cannot exist. The secondary discourses (and the actors, texts, images, etc. that constitute them) are the scaffold upon which the central discourse is built. The two primary discourses uncovered through this analysis were with regard to consumer concern: 1) LFTB is a product worthy of consumer concern, and 2) LFTB is a product with which consumers should not have concern. Supporting these discourses were a set of secondary discourses, later conceptualized as "problematizations," along with a variety of other actors all forming two discourse coalitions.

Controversies include sets of conflicting actors and discourses which coalesce in antagonistic groups in order to achieve certain goals (i.e. dominant discourse, stabilized network, policy outcomes) (Horowitz 2012). In the 2012 LFTB food scare controversy the two primary conflicting actors were the network-building actors, BPI and ABC News. Around these network-building actors and their central discourses formed two "discourse coalitions" or "the ensemble of a set of story lines, the actors that utter these story lines, and the practices that conform to these story lines all organized around a discourse"

(Hajer 1993:47). The concept of discourse coalition is useful in an actor-network analysis because the construction of a discourse coalition mirrors the process of translation - the building and maintenance of associations between heterogeneous actors with network-building actors working to assign other actors "identity, interests, a role to play, a course of action to follow, and projects to carry out" (Callon 1986:24). Additionally, the end goal of a discourse coalition, establishing a dominant discourse, coincides with the end-goal of the translation process – a stabilized network reflecting the network-building actor's preferred order of the actor-network (Latour 2007). Examining the translation process serves to explain the mechanisms by which discourse coalitions form and, ultimately, actor-networks become stabilized.

The content analysis of the videos released by BPI as well as ABC News, two discourse coalitions that formed in the 2012 LFTB food scare were revealed: 1) "pro-LFTB" coalition with BPI as the primary network-builder and with the goal of quelling consumer concern about LFTB and 2) an "anti-LFTB" coalition with ABC News as the primary network-builder and with the goal of raising consumer concern about LFTB. What is meant by "pro-LFTB" is that the actors and discourses supporting this discourse coalition are centered on providing support for the continued production of LFTB and, ultimately, a return to the blackboxed conditions pre-food scare when little public concern about LFTB existed. On the other hand, "anti-LFTB" is conceptualized as actors and discourses centered on permanently altering the pre-food scare order of the LFTB actor-network as a result of increased public awareness and concern. Both of these discourse coalitions were supported by the relations of various actors including academics, consumers, news anchors, investigative reporters, and politicians.

Placing actors into categories like “politicians” or “academics” or into “pro-” and “anti-” “discourse coalitions” is a simplification of the diversity amongst these actors and their relations within the 2012 LFTB food scare. Not all actors within the category of “politicians” likely possess exactly the same interests or occupy the same positions within the LFTB actor-network. Furthermore, as discussed later, not all categories of actors fit well within either the anti- or pro-LFTB discourse coalition. The placement of actors into categories serves as a tool for clearer conceptualization of these actors and their similar roles within the coalitions into which they were enrolled. Placing these categories within discourse coalitions illustrates their relations with the primary network-building actors, BPI and ABC News. What follows is a description of these discourse coalitions, the categories of actors inhabiting them, and the roles these actors filled within the 2012 LFTB food scare. Where applicable, also included are discussions of these categories of actors within the context of previous food scares.

Pro-LFTB Discourse Coalition

The pro-LFTB discourse coalition centered on BPI as the primary network-building actor. However, designating this coalition as “centered on” BPI is not to designate it as the “most powerful” actor, but simply the actor involved in enrolling other actors to act on its behalf in an attempt to return the LFTB actor-network to its pre-food scare configuration. Actor-network theory views power as a dispersed quality located within the relations an actor has with other actors rather than some centralized possession (Latour 2007). BPI is thus only as powerful as those actors with whom it is associated within the pro-LFTB coalition. It is the associations with other actors including

academics, politicians, trade associations, government regulators, and consumers that ultimately empower BPI and their discourse.

Actors forming the pro-LFTB discourse coalition consisted of BPI employees, academics, politicians, and trade association and other special interest groups. Despite their diversity and membership to various different organizations, these actors all worked to alleviate concerns over the presence of lean finely-textured beef within the US ground beef supply. The 2012 LFTB food scare revealed the extent to which food processors depend upon the enrollment of a variety of actors to support the production and sale of their products. What follows is a more detailed description of the actors within each of these categories, including their roles and the activities through which they worked to support the pro-LFTB discourse.

BPI Employees

Employees of BPI were a ubiquitous presence in YouTube videos produced by the company. Seven upper-level administrators, including founders Eldon and Regina Roth, were included in the videos. Personnel appearing most frequently were Craig Letch, BPI's Director of Food Safety, Rich Jochum, Corporate Administrator, and Jay Williams, BPI Plant Manager. Primarily, the role assumed by BPI's personnel was consumer education. These educational efforts, described in further detail in the "problematizations" discussion, were primarily aimed at demonstrating the safety and necessity of LFTB within the ground beef agrifood network. In the video titled, "Beef Products Inc. New Testing for E.coli," for example, Craig Letch explained BPI's test-and-hold method of testing from E.coli that BPI conducts:

> [T]esting and hold procedures for non-0157 S. tex. That's an additional six strains of E.coli. BPI's hold and test program consists of sampling out of each and every box of product. That product is stored in the freezer and not released in our system until negative test results are received from our third party laboratories (Beef Products Incorporated 2012[m]).

Through this video, Letch is educating viewers on the safety procedures BPI takes to ensure the products leaving their facility are tested not only for the commonly infectious E.coli 0157H7, but also additional potentially harmful strains of E.coli. Within the role of educator, BPI's employees are striving to communicate what they see is "the truth" behind their product. BPI's "truth" is not a singularity, but a collection of claims regarding the safety and utility of LFTB. Beyond BPI employees, a host of academics, namely animal and food scientists, were enrolled by BPI to support their version of the "truth."

Academics

Relations between academia, agribusiness, and the food industry have a long and complex history (Anderson 2009; Ogle 2013). University scholars working in the areas of food and agriculture conduct research at virtually every point along the agrifood chain. While animal scientists at land grant universities may study food at the production level, e.g. feed-to-milk production ratios of distiller grain consumption in dairy cattle, nutrition scholars working on the other end of the chain at the consumption level might examine the snacking habits of low-income youth. The relations are diverse, complex, and sometimes highly political. Food scholars like Dr. Marion Nestle (2007) of New York University and Cornell University act as vocal critics of the connections between "big food," "big ag," and the university. At least part of this criticism stems from the fuzzy boundaries between where the university ends and industry begins. While scholars like

Nestle advocate for a more exclusive and transparent boundary between the two, the contemporary reality is that the boundary between the university and industry is difficult to see and perhaps nonexistent. Furthermore, whether a person sees this as troubling, beneficial, or perhaps some combination of the two, is largely dependent upon their own values. Regardless of opinion, the relations are there and BPI's enrollment of academics into the pro-LFTB discourse coalition during the 2012 LFTB food scare demonstrates a case where the relations between the academy and industry are exposed.

The pro-LFTB discourse coalition had strong support from the membership of academics out of Iowa State University, Texas A & M, the University of Texas, and Kansas State University. Three of the academics voicing their support for LFTB had PhDs in Food Science & Technology, while two others held doctorates in Biology. Nearly all of these scientists, with the exception of one, were working in an agriculture-related department or teaching ag-related courses at their respective universities. Their roles as university educators translated well into their roles as educators in the videos produced by BPI. When appearing in the videos, four of the academics were seated in what appeared to be a laboratory classroom with whiteboards, illustrations, and lab equipment visible in the background. This lab environment provided a complimentary setting to the educational lessons provided by the scientists. One such lesson included in BPI's "Ammonia in Foods" video included explanations of what ammonia was, how it had been used as a fertilizer in agriculture, and why it is a necessary actor in mitigating the presence of E.coli in ground beef. This video (as well as others covering different aspects of LFTB) included diagrams and computer-generated animations to demonstrate to the viewer the process of using ammonia gas to treat the beef. It also emphasized the

presence of ammonia in a variety of organisms we interact with in everyday life, including ourselves. Video footage of ammonium-hydroxide's chemical symbol, "NH_3," floating above live-action images of people, dogs, cows, and carrots were meant to illustrate the "natural occurrence" of ammonia in many living organisms (see Figure 3). As Food Microbiologist Dr. Gary Acuff, Director of Food Safety at Texas A & M, explained:

> Ammonia is made up of nitrogen and hydrogen. We have ammonia and nitrogen all over the place [camera pans to view of a town from the sky, cooking line at a restaurant]. We find it in food, we have it in the soil [woman in wheat field surrounded by mountains]. We have it in our bodies. It's just part of our natural environment (Beef Products 2012[h]).

Figure 3. NH3 above Carrots from BPI video "Ammonia in Foods"

Dr. Acuff's comments and the lesson-like manner through which they were delivered are reflective of statements made by other academics accompanying him in the BPI videos. Dr. John Floros, Head of the Food Science Department of Penn State, offered a lesson on the necessity of innovations like ammonia fertilizer and LFTB as part of the solution for alleviating world hunger in the face of a growing world population.

Apart from appearances in the BPI informational videos, the academics of the pro-LFTB discourse coalition were also present for fielding questions at press conferences and other public events. One such event held at Iowa State University and sponsored by ISU's Block and Bridle Club was designed, as the title "The Truth: Lean Finely Textured Beef" suggests, to provide a forum for a panel of pro-LFTB actors to publicly counter the anti-LFTB narratives and answer questions from concerned audience members. Serving on the panel was ISU Professor of Animal Science, Dr. Jim Dickson, along with Janet Riley of the industry interest group, the American Meat Institute, Iowa Governor Terry Branstad, and Nancy Degner of the Iowa Beef Industry Council. In BPI's YouTube video covering the ISU forum, "Lean Finely Textured Beef Forum Jim Dickson," Dr. Dickson lays out his work with BPI:

> I've been working with BPI and its product for nearly 10 years. … Dr. Catherine Woteki who was a dean here, called me over and said 'oh by the way, there's a company that's got a process that will kill E.coli. And I'd like you to work with them.' … I was kind of a skeptic when I went in there, but what I found over the past years of working with that company is that these folks are really serious about it. It's easy to say the right things, it's easy to stand up in front of a group like this and say the right things. You know, it's hard to live it day in and day out. It may sound like a commercial for the company, but you know what, that's what they do. Day in and day out (Beef Products Incorporated 2012[p]).

Through this quote Dr. Dickson is not only vouching for the utility of LFTB, but also the legitimacy of the BPI company within the LFTB agro-food network. Dr. Dickson's work for the company coupled with his testament of their good character demonstrate not only the role academics play as contracted researchers for BPI, but also their involvement in public relations management for the company. Dr. Dickson and other academics were not the only public employees enrolled by BPI to speak on their behalf. A number of current and past politicians also occupied positions in the pro-LFTB discourse coalition.

Politicians

Similar to the relations between academia and the agri-food industry, the relations between politicians and government leaders and agri-food corporations are complex and contested. Stretching back to the mid-1950s, policies heralded by then United States Secretary of Agriculture Earl Butz produced significant changes in the scale, diversity, and culture of production agriculture and ultimately contributed the growth of large agribusiness corporations (Anderson 2009). Relations between the agri-food industry and political figures, especially in states where agricultural output is high, is at face-value not all that scandalous as the relations are part of the necessary framework for building regulatory and economic policy. However, it is the nature of these relations including the possibility for conflicts-of-interest that often come under scrutiny by outspoken scholars like Dr. Marion Nestle. Nestle and other scholars critical of the agri-food industry vocalize concern regarding the interests ultimately served when former government regulators or politicians move from their regulatory and policy posts to high-level positions within the agri-food industries (and sometimes vice versa). Former chief of staff at the USDA's Food Safety and Inspection Service Lisa Wallenda Picard, for example, ruffled some feathers when she moved from her regulatory position to the vice president of scientific and regulatory affairs at the National Turkey Federation (Food Chemical News 2011; Philpott 2011).

Apart from these much-criticized relations, the role of politicians in past food scares (e.g. the March 2007 E.coli spinach scare in California and 2011 US listeriosis outbreak from Colorado melons) has largely involved attempts to shield the public from possible future contamination outbreaks through drafting new legislation or repairing

tears in regulatory policy (Herrmann, Warland, and Sterngold 1997). The 2012 LFTB food scare differs significantly from these previous scares in that these past scares involved undisputed evidence of severe illnesses and even death, while the 2012 LFTB food scare involved no such sickness outbreak. This difference is reflected in the predominant role taken by political figures in the 2012 LFTB food scare. While one Democratic Maine Congresswoman Chellie Pingree circulated a petition to ban LFTB from the National School Lunch Program, the most vocal politicians were enrolled into the pro-LFTB discourse coalition as key spokespeople in a public relations campaign to counter the anti-LFTB discourse of the opposing coalition (Associated Press 2012). Politicians expressed the goal of mitigating the probable negative economic impacts of losing BPI's LFTB processing plants.

In terms of numbers, politicians were rivaled only by BPI employees within the pro-LFTB discourse coalition at a total of seven representatives. Pro-LFTB politicians included the governors of Iowa, Kansas, and Texas, lieutenant governors from Nebraska and South Dakota, and former US and state representatives from Iowa and South Dakota respectively. According to a publication by Iowa State University Extension Livestock Economist Shane Ellis (2010), the five states where the politicians work represent five of the top ten beef cattle producing states in terms of total head of beef cattle. Apart from former Democratic United States Representative Stephanie Herseth-Sandlin, all other politicians in the pro-LFTB coalition are members of the Republican Party. Hailing from top beef-producing states, the politicians of the pro-LFTB coalition presented stern warnings and expressed strong concerns regarding the negative economic impacts of decreasing demand for LFTB. At a BPI press conference in Dakota Dunes, SD, state

governors and lieutenant governors voiced their support for BPI and their concerns with plant closures and job losses in their states. In a somber tone, Texas Governor Rick Perry told ABC News correspondent Jim Avila:

> But I do want to do that and I think it's important for those of you in the media to be able to answer to the public because it's the consuming public that's being hurt here. I have to go back to Texas and explain to people in Amarillo why they may not have a job. And I'm tellin' ya I don't, I don't know the answer to that. Has there been one individual in this country that has been poisoned, or has been sick, or has died from a product that came out of this company? You wouldn't let me get away with that. Stonewallin' ya (Beef Products Incorporated 2012º).

Governor Perry's comments reflect his economic concerns following the announcement of BPI's pending Amarillo, TX plant closure (Schulte 2012). Perry's statement also echoes the frustrations of other political leaders including Governor of Iowa Terry Brastad who mentioned that it is "very hard to create jobs within our states in a difficult economy" and that the closure of BPI's plants, including one in Waterloo, IA, "makes it even harder" (Beef Products Incorporated 2012º). As a result of their frustrations, these governors along with other political leaders from top beef-producing states joined the pro-LFTB discourse coalition and participated in a plant-tour, press conference, BPI cookouts, and other events held to support BPI and LFTB. Politicians were also accompanied by actors from various interest groups.

Interest Groups

Interest groups operating at local, regional, and national levels are prolific throughout the landscapes of food and agriculture. An interest group is any organization seeking to promote publicly and create advantages for its cause (Baker and Losco 2008). Within the realm of food and agriculture, interest groups include: trade associations

promoting particular commodities (e.g. National Cattlemen's Beef Association), consumer advocacy groups (e.g. Community Food Security Coalition), food industry labor unions (e.g. United Food and Commercial Workers International Union), agricultural labor unions (e.g. United Farm Workers), and many other groups working to advance agendas at various points along the agrifood chain. The goals of these food and agriculture interest groups include raising awareness about their respective causes and also impacting food and agricultural policies. As laid out by Wilde (2013), interest groups are powerful forces that can shape food and agriculture policy to coincide more strongly with their interests. Interest groups attempt to shape everything from the largest piece of US agricultural legislation, the United States Farm Bill, to food labeling polices, and even worker wages (Wilde 2013). Influencing agrifood policy often requires that these groups have the attention of key political figures and one way to attract this attention is through financial campaign contributions. While there is no guarantee of a return on their investments, there is a body of research suggesting these investments do have some impact on agrifood policies in the US (Gawande 2005). Furthermore, interest groups are sometimes in competition with one another and thus must work to establish the dominance of their narratives. In the 2012 LFTB food scare, for example, some interest groups inhabited the pro-LFTB discourse coalition while others were represented in the anti-LFTB coalition.

The interest groups enrolled in the pro-LFTB coalition were few in number, but diverse in the interests they represented. Interest groups of the pro-LFTB discourse coalition included a trade association and a nonprofit public health organization. The most ubiquitous interest group in the 2012 LFTB food scare was the American Meat

Institute, a "national trade association that represents companies that process 95 percent of red meat and 70 percent of turkey products in the US and their suppliers throughout America" (American Meat Institute 2014[1]).

Representing the AMI in the 2012 LFTB food scare was Senior Vice President of Public Affairs and Member Services, Janet Riley. Through Riley, the role of AMI within the pro-LFTB coalition was to provide support in communicating "The Facts about Lean Finely Textured Beef" as viewed through the lens of BPI and the AMI trade association to which they belong (Beef Products Inc. 2013[a]). Riley made appearances at the Iowa State University rally sponsored by the Block and Bridle Club, defended BPI and LFTB on ABC News, and appeared in various other videos produced by BPI to get out "the truth" about LFTB. One "truth" with which Riley was especially concerned was the control over defining LFTB. In a BPI-produced video titled "The Facts about Lean Finely Textured Beef," Riley stated:

> I realize that recent news reports about lean finely textured beef have raised some concerns because some have dubbed this beef product, "pink slime." And the concern is understandable. What you have been hearing is confusing and it's unsettling because there is a lot of misinformation floating around in media coverage and on the internet. I want to address some of these wild internet rumors and the claims that have appeared on some major TV networks. Lean finely textured beef isn't substandard beef. It's not scraps scooped from the floor. It's not so-called salvage meat. It's not inedible meat that we somehow make edible and it's not dogfood. Here's what lean finely textured beef is. Now when a big beef carcass is cut down into smaller cuts, chunks of lean tissue and fat result. We call them trimmings… Nutritionally it's equal to ground beef. It tastes like beef and under a microscope it looks like other beef. The same two proteins from beef are found in all beef. From filets and steaks to ribs and roasts and ground beef, as well as in lean finely textured beef (Beef Products Inc. 2013[a]).

Here Riley first empathized with consumers' concerns regarding LFTB by addressing consumers' concerns with the product and agreeing that the information is "unsettling." Riley then framed the context from which those concerns arose as one of misinformed

"media coverage" and "wild internet rumors" and claims from "major TV networks." Finally, Riley redefined LFTB according to the preferred discourse of the pro-LFTB coalition by stating that LFTB is not "scraps" or "salvage," but instead "trimmings" and ultimately, as indicated by the pro-LFTB coalition "Beef is Beef" slogan, LFTB is technically beef. The video was an attempt to reach out to consumers and redefine their understanding of LFTB.

Another interest group enrolled into the pro-LFTB discourse coalition a food safety advocacy organization, STOP Foodborne Illness. According to their website, Stopfoodborneillness.org, STOP Foodborne Illness is a "national nonprofit public health organization dedicated to the prevention of illness and death from foodborne illness by advocating for sound public policy, building public awareness, and assisting those impacted by foodborne illness" (STOP Foodborne Illness 2014). Nancy Donley, the founder of STOP, filled the role of a food safety expert vouching for the safety of LFTB as well as BPI's testing methods. Donley is quoted on BPI's "BeefIsBeef.com" website and served as a panelist at BPI's press conference featuring governors, an animal science professor, and the USDA Undersecretary of Food Safety, Dr. Elisabeth Hagen. Donley's son died from consuming E.coli-contaminated ground beef and she declared BPI's "commitment to food safety" as the reason why she is speaking to support them and their product. Donley explained that she was "very concerned about campaigns such as" that against LFTB because she views LFTB as a "food safety innovation" that has "saved lives" (Beef Products Inc.[b] 2012). According to Donley, "food safety" is BPI's "number one concern" and their product helps to "make sure tragedies like what happened to [her] son don't continue to happen" (Beef Products Inc.[b] 2012). Here Donley shows her

support for the BPI and the discourse of the pro-LFTB coalition through equating LFTB as a technology that saves lives. As discussed later in this analysis, other actors of the pro-LFTB coalition echoed Donley's safety discourse.

Anti-LFTB Discourse Coalition

The anti-LFTB discourse coalition centered on ABC News as the primary network-building actor. As previously noted with the BPI and the pro-LFTB coalition, the power exercised by ABC News through their series of "pink slime" broadcasts derived from their successful enrollment of other anti-LFTB actors. Without investing in these relations, the anti-LFTB discourse coalition would not exist. ABC News broadcasts provided a centralized outlet where the claims and stories of other anti-LFTB actors built a discourse coalition aimed at raising concerns over LFTB in the US ground beef supply. It is the associations with other actors including anchors and reporters, organic butchers, food retailers, bloggers, former government regulators, and consumers/viewers that ultimately empower ABC News and the collective anti-LFTB discourse coalition build around them.

The actors enrolled by ABC News to populate the anti-LFTB discourse coalition were diverse and fewer in number than those in the pro-LFTB actor network. One possible explanation for the fewer number of actors populating the ABC News broadcasts when compared with videos produced by BPI is found in the differing structures between nightly television news reports and YouTube videos. Television news reports delivered via nightly evening news programs are typically populated with a series of shorter segments covering a variety of current events all within thirty minutes. The number of

events covered within the short time frame provides limited time for coverage of any single newsworthy event or issue and thus limits the number of actors enrolled for any particular story. Additionally, the shorter time frame of evening television news reports also translates to more careful decisions regarding how interviews and other content are edited and distilled into their delivered format. In contrast to television news reports, YouTube provides a platform for more frequent and lengthier video releases likely allowing BPI to include a larger number of enrolled actors and lengthier, more in-depth discussions with pro-LFTB actors. Moreover, in contrast to the wide range of current events demanding coverage by ABC News, BPI was singularly focused on alleviating concerns over LFTB. However, it is important to understand that the disparity in coverage and number of actors included by each network-building actor does not necessarily translate into a disparity in the power of their respective modes of communication.

According to Nielsen Media Research, *ABC World News with Diane Sawyer* averaged just over 7.5 million viewers age for the week of March 5, 2012, the week during which the first story on "pink slime" or LFTB aired (Ford 2012). This made *ABC World News with Diane Sawyer* the second most viewed news program in the United States during the week of March 5th, 2012 with just over 1 million fewer viewers than *NBC Nightly News* (Ford 2012). When contrasting this with the number of BPI YouTube video views, BPI's YouTube videos tallied just over 70,000 total viewers from the time the first video was released on July 13th, 2011, to September 13th, 2014 (YouTube 2014). This comparison of viewership between the pro-LFTB network-building actor, BPI, and the anti-LFTB network-building actor, ABC News, demonstrates that although ABC

News had fewer actors and less total coverage devoted to LFTB, the number of viewers reached by its flagship program, *ABC World News with Diane Sawyer*, far exceeded that of BPI's YouTube videos. Thus it is difficult to assert that fewer actors and fewer total minutes of coverage translated to less power or a less effective message for ABC News. Though beyond the scope of this study, the fact that the viewership of *ABC World News with Diane Sawyer* dwarfs that of BPI's YouTube videos at least anecdotally suggests a more far-reaching and perhaps more dominant anti-LFTB message.

ABC News Cast

Historically, the relations between media and the agrifood industry are peppered with tension – especially concerning food scares (Beardsworth and Keil 2001). During the 1980s Alar food scare involving apples, for example, the *CBS News* program *60 Minutes* broadcast an investigative report involving research funded by the National Resource Defense Council finding the chemical used to prevent apples from ripening too quickly, Alar or daminozide, released carcinogens upon breaking down (Herrmann et al. 1997). This report heavily influenced apple consumption in the United States as consumers greatly reduced their consumption of apples and apple products (Herrmann et al. 1997). Additionally, the United States Environmental Protection Agency changed their policies on Alar and ultimately banned the use of daminozide on food products (Hermann et al. 1997). Uniroyal Chemical Company, the corporation that produced Alar, and apple growers from the state of Washington were outraged at the portrayal of Alar and organized a pro-Alar response including filing a libel lawsuit against *CBS* for their losses in Alar and apple sales (Hermann et al. 1997). Alar and other food scares not the only point of tension between news media and industry. As Lockie (2006) found, news

media often portray industrialized foods as questionable and deserving of scrupulous investigation. In the 2012 LFTB food scare, the cast of ABC News fit within this role of "investigative journalists" reporting about a questionable beef product they labeled "pink slime."

While "ABC News" is often discussed in this analysis as a singular actor, it is important to note that this is merely a punctualized description of a much larger actor-network. ABC News broadcasts included a cast of actors including anchors, reporters, and correspondents. The two most noteworthy ABC News actors were *ABC World News* anchor Diane Sawyer and senior correspondent Jim Avila as they were the frequently appearing actors in the broadcasts. Additionally, Avila was the lead correspondent in reporting the story of LFTB or, as frequently referred to by Avila and ABC News, "pink slime." Through their language, graphics, and the roles they assigned to other actors, the roles of Sawyer, Avila, and other ABC News reporters were framed as that of investigative journalists uncovering the details of a secretive meat industry practice. As depicted in the screen capture below taken from the first ABC News broadcast covering LFTB titled "Pink Slime and You," the caption "ABC News INVESTIGATES" is just one example of how ABC News worked to frame their LFTB series as investigative journalism (ABC News[a] 2012).

Figure 4. Framing as Investigative Journalism from ABC News Broadcast "Pink Slime and You"

In addition to graphics, ABC News also used language to frame themselves as investigative journalists determined to "get answers" (ABC News[b] 2012). At the beginning of the *ABC World News'* third installment of the series titled "Pink Slime Outrage: Beef Industry Responds," Sawyer explained:

> We are back on the case tonight. Our ABC News investigation of the filler called "pink slime" in seventy percent of the ground beef sold at supermarkets in this country. You have flooded us with emails about your attempts to get direct answers from your supermarkets. Which ones allow it? Which ones don't? And what does the beef industry have to say? ABC's Senior National Correspondent Jim Avila went right to the top to *get answers* (ABC News[b] 2012, emphasis mine).

Through this quote, Sawyer reassured viewers of ABC News that they were "back on the case" and determined to "get answers" to the questions consumers asked via the "flood" of emails received by ABC News. In addition to their investigative journalist role, as the central network-building actor, ABC News also held the role of enrolling other actors into the anti-LFTB discourse coalition.

Anti-LFTB actors enrolled by ABC News

Via their investigative journalism frame, ABC News helped to support the anti-LFTB discourse coalition goal of raising concerns over LFTB through enrolling various other actors to build and support the network. These actors appeared predominantly on *ABC World News with Diane Sawyer*, with less frequent appearances on other ABC News programs like *Nightline*. The fewer numbers and diversity of actors enrolled by ABC News into the anti-LFTB discourse coalition when compared with that of the pro-LFTB discourse coalition translated to less robust categorizations of actors. This difference is reflected in the following discussion of enrolled anti-LFTB actors and their roles within the anti-LFTB discourse coalition.

"Whistleblowers"

The role of whistleblowers in food scares and other agro-food issues is highly politicized and contested, especially with regard to identifying exactly whether someone disclosing information about an agrifood corporation is a "whistleblower" or a libelous defaming criminal. According to the nonprofit whistleblower representation group, the Government Accountability Project (GAP), a whistleblower is:

> An employee who discloses information that s/he reasonably believes is evidence of illegality, gross waste or fraud, mismanagement, abuse of power, general wrongdoing, or a substantial and specific danger to public health and safety. Typically, whistleblowers speak out to parties that can influence and rectify the situation. These parties include the media, organizational managers, hotlines, or Congressional members/staff, to name a few (GAP 2014).

Government Accountability Project is a nonprofit organization that provides legal representation and other services to whistleblowers they deem wrongful targets of legal

action from corporations and other institutions they spoke out against. Undercover viral videos depicting agricultural animal abuse from organizations like People for the Ethical Treatment of Animals (PETA) and scares like the Alar food scare of the late 1980s prompted the growth of a challenging legal context for people claiming the status of whistleblower and the groups that represent them. Agrifood industries lobbied hard to establish food disparagement laws, sometimes deemed "veggie libel laws," in order to protect themselves against forms of speech potentially harmful to their bottom-line (Bedermen, Christensen, and Quesenberry 1997). These laws expose the label "whistleblower" as a politically contested term and also reveal the significant roles that whistleblowers can play in food scare events. During the 2012 LFTB food scare, the term whistleblower was revealed as a label not always voluntarily assigned.

While most of the scientists enrolled by the pro-LFTB discourse coalition were academics, the two scientists enrolled by ABC News were former USDA microbiologists. Two actors included in the broadcast through which ABC News "broke" the story of LFTB in the US ground beef supply on network television news were former USDA microbiologists Gerald Zirnstein and Carl Custer. Described by ABC News' Diane Sawyer as a "whistleblower" (ABC News[a] 2012), Zirnstein is an important figure in the LFTB food scare as it was in his 2002 email to colleagues at the USDA that he coined the term "pink slime" (Moss 2009). Zirnstein's concern with LFTB was with what he felt it was "economic fraud" and not "fresh ground beef," but instead "a cheap substitute being added in" (ABC News[a] 2012). According to Carl Custer, his concern with the product was that he also did not consider it to be beef because it is a "salvage product" (ABC News[a] 2012).

Perhaps equally as important as the opinions expressed by Zirnstein and Custer was the framing of their roles by ABC News as "whistleblowers" who have "come forward" to reveal that "pink slime" is in Americans' ground beef (ABC News[a] 2012). Although labeled as a "whistleblower" in the March 7th *ABC World News* broadcast, in an interview with Reuters, Zirnstein was reluctant to label himself a "whistleblower" and instead referred to himself as "really an involuntary whistleblower" since the email he had sent in 2002 was a private internal email between Zirnstein and another work colleague (Gillam 2012). Despite Zirnstein's reluctance, the assignment of the role of whistleblower by ABC News helped to further foster their role as investigative journalists uncovering a shocking industry practice. Zirnstein and Custer were not the only actors framed as whistleblowers within the 2012 LFTB food scare. Another actor enrolled by ABC News, who is perhaps more congruently aligned with the face-valid definition of whistleblower, was former BPI Corporate Quality Assurance Manager, Kit Foshee. Foshee, a client of Government Accountability Project, had previously publicly claimed that the blending BPI product with other ground beef would not have any statistically significant antimicrobial reduction effect" (GAP 2012). When appearing on *ABC World News with Diane Sawyer*, Foshee's comments were used to solidify claims by Zirnstein and Custer that "it's not what the typical lay-person would consider meat" and also raised questions regarding the nutritional quality of LFTB (ABC News[c] 2012). Zirnstein, Custer, and Foshee were not the only actors enrolled to support these claims.

Food Retailers

Food retailers occupy a unique place within agro-food networks during food scares. Food retailers are consumers of products from meat processors and other food

product suppliers, but are also the gatekeepers to consumers at the household level. In this role, food retailers act like a liaison between the companies that process and manufacture foods and the consumers who ultimately purchase and eat the foods. If consumers are unhappy with or have questions regarding a product's quality, the food retailer is often the front line of addressing these consumer concerns and also the actor who then relays these concerns onto the supplier or processor. It is through the relation to the food retailer that the customer's desires and concerns are translated to the supplier. Through the food retailer, consumers collectively hold significant power over food product suppliers and processors. During food scares, consumers translate the food concerns they encounter via the media and enroll food retailers to take action. In the Alar scare of the late 1980s, food retailers under intense consumer pressure removed apples and some apple products from their shelves (Hermann et al. 1997). This action had severe immediate negative consequences for orchards which then stopped using Alar which ultimately meant a loss for Alar manufacturer, Uniroyal Inc. (Hermann et al. 1997). Throughout the 2012 LFTB food scare, a similar storyline unfolded. Within this scare, however, ABC News played a role in enrolling food retailers into the anti-LFTB discourse coalition.

As the mediators between BPI and consumers, food retailers played a significant role in the 2012 LFTB food scare. ABC News recognized the mediator role inhabited by food retailers and used it to enroll them into the anti-LFTB discourse coalition. In their March 9th broadcast titled "Pink Slime Outrage: Beef Industry Responds," *ABC World News with Diane Sawyer* began the broadcast with a large red graphic reading "What's in Your Meat?" during which Sawyer stated:

> You have flooded us with emails about your attempts to get direct answers from your supermarkets. Which ones allow it? Which ones don't? And what does the beef industry have to say? ABC's Senior National Correspondent Jim Avila went right to the top to get answers (ABC News[b] 2012).

ABC News then enrolled food retailers through soliciting comment on LFTB and including interviews with some retailers in their broadcasts. This action positioned ABC News as a mediator between food retailers and their consumers. ABC News enrolled consumers through soliciting emails from viewers to comment on the LFTB issue and then, after successfully enrolling these consumers, acted as the voice for consumers by enrolling food retailers to provide comments regarding their use of LFTB. In the course of their interviews with food retailers, ABC News discussed LFTB with a well-known organic meats retailer, Joshua Applestone of Fleisher's Pasture-Raised Meats. Applestone remarked that LFTB was an "unnatural process" and something that he said he "wouldn't serve or sell his family" (ABC News[b] 2012). Costco Wholesale's Vice President for Food Safety, Craig Wilson, was also interviewed and commented that he personally didn't know how he "could explain to a Costco member that we put a trim that's been treated with ammonia in their ground beef" (ABC News[b] 2012). As seen below in Figure 5, ABC News displayed the Costco Wholesale and other larger retailers in a graphic reading "Contains No Pink Slime" juxtaposing their positions against other large retailers who "did not respond or comment," said that they "complied with government standards, or responded that they "use pink slime" (ABC News[b] 2012).

Figure 5. ABC News as a Mediator between Consumers and Food Retailers

ABC News also provided "Tips for Checking Your Beef" to consumers who were concerned about whether they were purchasing LFTB (ABC News[c] 2012). Through these actions ABC News framed themselves as an information source for LFTB in ground beef and further positioned themselves as a mediator between consumers and food retailers. By identifying which retailers did and did not use "pink slime," ABC News also likely placed further pressure on the retailers to reconsider their use of LFTB. Many retailers, including Safeway – the second largest supermarket chain in the country, were then mobilized by ABC News to divest of their LFTB use and by doing so were translated as anti-LFTB actors.

Food Writers

In addition to whistleblowers and food retailers, ABC News also enrolled food writers into the anti-LFTB discourse coalition. While only two food writers were actually enrolled, these actors, especially blogger Bettina Siegel, are significant for their potential impact upon the consumers subscribing to their publications. The two food

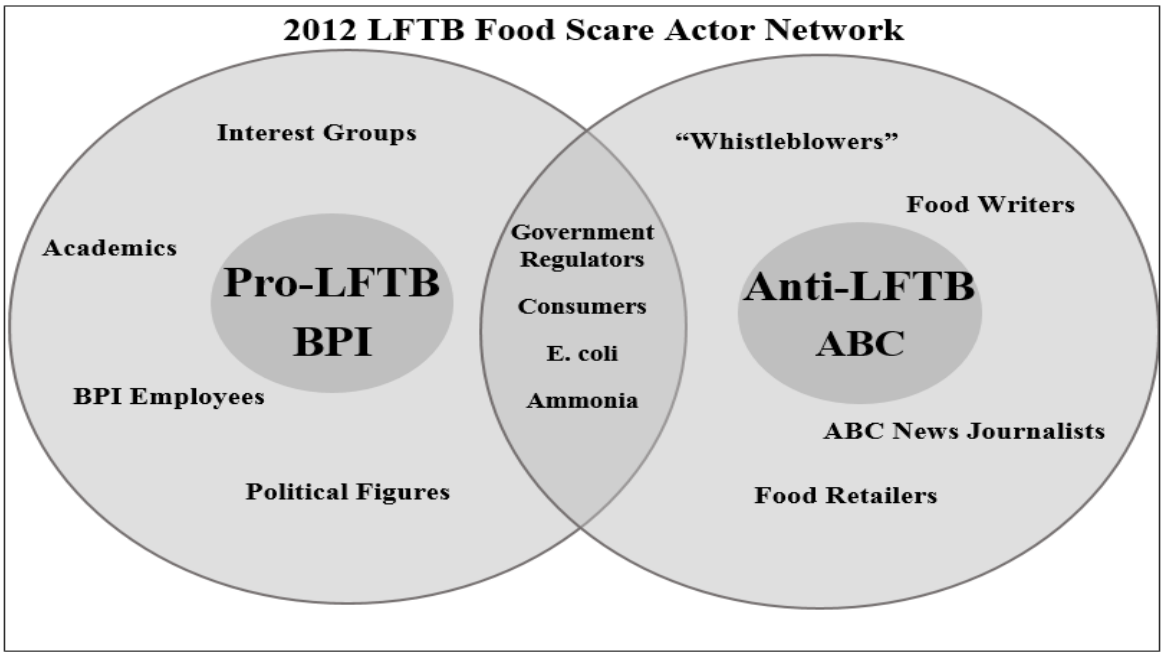
writers enrolled by ABC News were the Associated Press' Food Editor J.M. Hirsch and food blogger Bettina Siegel. Hirsch was enrolled as a food critic to conduct a "pink slime taste test." After cooking one burger with LFTB and one not containing the product, Hirsch's on-air conclusion was that the "ground beef without the pink stuff in it is definitely a much better burger" (ABC News[d] 2012). Food blogger Bettina Siegel was active in enrolling other actors into the anti-LFTB discourse coalition though her Change.org petition, "Tell USDA to STOP Using Pink Slime in School Food." Siegel's petition was launched on March 6th, 2012 and in just nine days collected over 200,000 signatures. During her interview on *ABC World News with Diane Sawyer*, Siegel commented that she thought "consumers have every right to know what they're eating" and that she thinks LFTB "needs to be labeled" (ABC News[e] 2012). Enrolling Hirsch and Siegel into the anti-LFTB discourse coalition only continued to add support for the concerns over LFTB raised by ABC News.

Actors Occupying Both Coalitions

Within the 2012 LFTB food scare, some categories of actors are difficult to place completely within the pro- or anti-LFTB discourse coalitions. As illustrated in Figure 6, human actors like government regulators and consumers, as well as nonhuman actors like E.coli bacteria and ammonia, occupy associations within the pro- and anti-LFTB discourse coalitions during the 2012 LFTB food scare. For example, while USDA Undersecretary of Agriculture Dr. Elisabeth Hagen voiced that BPI's product LFTB meets USDA and FDA regulations, the USDA also altered policies to permit school districts to select between ground beef containing LFTB and non-LFTB ground beef. Either one of these actions taken alone might represent a more pro- or anti-LFTB stance,

however, the reality is that relations are complex and often messier than heuristic conceptualizations.

Figure 6. The 2012 LFTB Actor-Network and Discourse Coalitions



Government Regulators

Even an adequate description of the role government regulators play in food scares could fill an entire tome. Government regulators within the United States Department of Agriculture and Food and Drug Administration handle a broadly sweeping diverse array of tasks from conducting testing and risk assessments on the safety of foods, packaging, and ingredients, to regulating cultivation practices and labeling of organic foods (Wilde 2013). Outside of the USDA and FDA, the United States Environmental Protection Agency is also involved in the regulation of certain chemical and biological agents used in the production and processing of agricultural products (Wilde 2013). When food scares break out, these agencies come under scrutiny by the

media, consumer advocacy groups, and contingents of concerned citizens. In the midst of the Alar scare of the late 1980s, the Natural Resources Defense Council (NRDC) and the American Academy of Pediatrics along with a strong contingent of nervous consumers levied enough pressure on the EPA that they classified it as a "probable carcinogen" in 1987 and later banned it in 1989 despite significant pushback from orchards and Alar manufacturer Uniroyal Inc. (Hermann et al. 1997; Nestle 2013). The policy outcomes during the Alar scare are not unique. In the 2012 LFTB food scare, the pro- and anti-LFTB discourse coalitions jockeyed to enroll key government regulators to support their respective discourses.

Government regulators including United States Secretary of Agriculture Tom Vilsack and Undersecretary of Food Safety Dr. Elisabeth Hagen were two actors within the USDA enrolled by both the pro- and anti-LFTB discourse coalitions. While publicly some statements appear as though regulators occupy firm roles of government support within the pro-LFTB discourse coalition, their policy actions under pressure from anti-LFTB actors reflect that the inadequacy of placing these regulators wholly within one coalition. In a BPI YouTube Channel video, Secretary Vilsack was questioned in March 2012 regarding his concerns with LFTB and gave a response strongly supportive and reflective of pro-LFTB discourse, while also noting the policy changes with the USDA:

> First and foremost, it's safe. And in fact the treatment basically assures that there aren't pathogens that can cause foodborne illness. Which is important for people to know that we want to make sure that whatever is fed to our children is safe. Secondly, its fat content is substantially below what you would see with traditionally ground beef. It's about 95% lean, so those of us who are concerned about obesity and making sure youngsters are getting good, nutritious calories intake at school, obviously are looking at the low fat content. And historically, it's been less expensive, so it's been an opportunity for school districts to fit through tight budget times, uh adequate resources and adequate nutrition for their children (Beef Products Incorporated[e] 2012).

Secretary Vilsack's comments supporting the claims of safety, nutrition, and affordability of LFTB were later echoed by Undersecretary Hagen when she spoke at a press conference held at BPI headquarters in Dakota Dunes, SD. Dr. Hagen highlighted that products approved by the USDA such as LFTB "meet the highest most rigorous food safety standards" and that LFTB had "never been found to be unsafe" (Beef Products Incorporated[d] 2012). Additionally, Hagen also reiterated the benefits of LFTB's affordability or "value" and "nutrition content" for the National School Lunch Program (Beef Products Incorporated[d] 2012). Secretary Vilsack and Undersecretary Hagen's comments echo discourse used by BPI and other pro-LFTB actors to quell consumer concerns over LFTB.

Despite the pro-LFTB comments offered by Vilsack and Hagen, both government regulators also followed their praise of LFTB with the acknowledgment that a significant contingent of consumers had concerns about LFTB and demanded changes. Secretary Vilsack framed the consumer concerns as "folks" who had "raised an issue about the appearance" of LFTB with a solution to provide consumers a "choice" in the "marketplace" (Beef Products Incorporated[e] 2012). Undersecretary Hagen also mentioned that their "customers," "the school districts of the United States," "showed [the USDA] in an overwhelming fashion that they wanted to have a choice" (Beef Products Incorporated[d] 2012). Ultimately, anti-LFTB consumer pressure influenced the USDA's NSLP to alter their policy on purchasing options for ground beef and to allow school districts to purchase ground beef with or without LFTB. It is the public support for LFTB and the response to the will of consumers through policy changes that placed these government regulators within both pro- and anti-LFTB discourse coalitions. This

said, Secretary Vilsack rounded out his announcement of the new choice-based policy with a warning that consumers should make "an informed choice" knowing that choosing ground beef without LFTB means choosing a "more expensive" product with a "higher fat content" and perhaps even "more difficult to shape into patties" (Beef Products Incorporated[e] 2012).

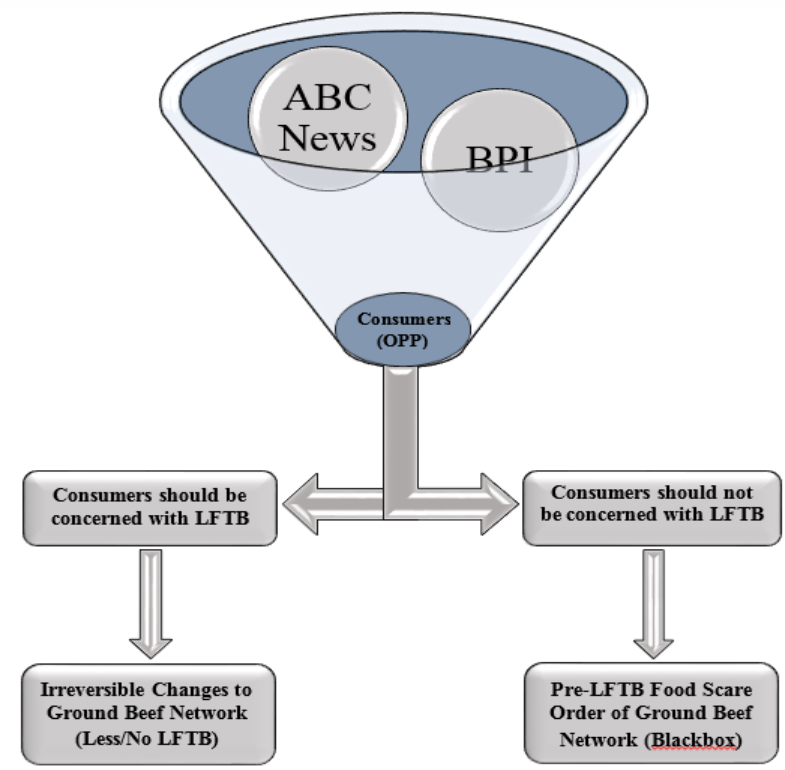
Consumers

Consumers are an important actor within any agrifood actor-network. Widespread concern regarding an item of food among consumers is a central factor in what constitutes a food scare (Beardsworth and Keil 2001). This factor makes consumers an especially valuable actor to enroll in a discourse coalition during a food scare as their support or lack thereof can significantly tip the scales to decide the outcome of the scare. In the Alar food scare of the 1980s, for example, anti-Alar actors like the NRDC and the television program *60 Minutes* enrolled apple consumers through publicizing their framing of Alar as a carcinogen (Hermann et al. 1997). The successful enrollment of apple consumers meant that those who actually purchased and thus created the demand for the fruit halted their consumption of apples and by doing so negatively impacted the orchards forcing them to divest their use of the Alar product altogether (Hermann et al. 1997). In the 2012 LFTB food scare the pro- and anti-LFTB discourse coalitions were structured around trying to extinguish or raise consumer concerns respectively.

The role of consumers in the 2012 LFTB food scare was what actor-network theorist Michael Callon (1986) referred to as an obligatory passage point, or a central focal point around which network-building actors converge and must negotiate in order to accomplish their goals. As displayed below in Figure 7, it is useful to visualize the OPP

as a funnel through which network-building actors must successfully pass to establish their preferred ordering of the network. In the 2012 LFTB food scare, consumers occupied this OPP as it was their level of concern with the inclusion of LFTB in ground beef that ultimately impacted the order of the ground beef actor-network – namely the degree to which LFTB (and BPI) remained a significant part of the network. Figure 7 illustrates that ABC News and BPI had to work to enroll consumers into their respective discourse coalitions to ensure that their respective outcomes were achieved. While for ABC News this meant increasing consumer concern regarding the use of LFTB in ground beef and ultimately impacting the network order to address these concerns, BPI worked to ensure the opposite with their attempts to extinguish consumer concerns and ultimately return to the pre-LFTB food scare order of the ground beef network.

Figure 7. Consumers as Obligatory Passage Point



While ultimately the successful enrollment of consumers into the anti-LFTB discourse coalition caused significant damage to the pro-LFTB coalition and BPI's bottom line, it is difficult to place consumers completely within the confines of either coalition. Where to place consumers depends upon the moment of the scare and not all consumers completely divested of their LFTB consumption. Closer to the pre-LFTB food scare blackboxed stated of the ground beef actor-network, consumers had relatively little concern regarding LFTB as they had largely yet to be alerted to its presence within the ground beef supply. With the ABC News broadcasts, however, some consumers were subsequently enrolled into the anti-LFTB discourse coalition by ABC News through viewing their reports and via ABC News requests that consumers submit their concerns via email or uploaded videos. Emily Anderson, a consumer and ABC News viewer from Albuquerque, NM, submitted a video asking "Which grocery stores near me do or don't sell ground beef that contains ammonia-treated pink-slime?" ABC News aired Emily's video along with a handful of other clips of consumers expressing their concerns regarding LFTB. Despite these displays of consumer concern, other consumers were not as convinced that LFTB should warrant any worry.

While 43 states enrolled in the National School Lunch Program declined to renew purchase orders for ground beef containing LFTB, seven states (South Dakota, Iowa, Nebraska, Illinois, Texas, Pennsylvania, and Virginia) continued to serve ground beef containing LFTB in their public schools (Knowles 2013). Moreover, there were also groups of consumers who formed pro-LFTB rallies, such as that held by Iowa State University's Block and Bridle Club, and who appeared in BPI videos as consumers supportive of BPI and LFTB. Former Democratic Congresswoman Stephanie Herseth

Sandlin, for example, appeared alongside her son in one BPI video to voice her support for BPI. Sandlin stated that the comparison between LFTB and dog food was "outrageous" and reassured other consumers that she had visited BPI plants and felt "assured" "as a mother" that BPI was doing what was "good for agriculture" and "feeding families here and abroad" (Beef Products Incorporated[f] 2012, Beef Products Incorporated[g] 2012). Clearly placing consumers wholly within the pro- or anti-LFTB discourse coalition is a misstep. Another misstep is to identify the roles of only human actors within the 2012 LFTB food scare.

Nonhuman Actors: E.coli and Ammonia

One important theoretical innovation offered by actor-network theory is the recognition of the social as extending beyond relations solely between human actors. Actor-network analysts must thus include in their visualization of relations the differences nonhuman actors make within any particular set of relations (i.e. the agency of nonhuman actors), and food scares are certainly no exception. Bacteria, viruses, and chemicals (e.g. pesticides, herbicides, processing agents) and their adverse (perceived or actual) relations with human physiology are often what ignite food scares. In order to have an environment in which these categories of nonhuman actors can act, however, there must also be a set of relations favorable for the exercise of their agency. For example, Dondaldson et al. (2002) highlighted how the normal operation of the livestock production actor-network in the United Kingdom facilitated the spread of Food and Mouth Disease (FMD). The movement and contact of animals, farm machinery, farmers, and other important actors in livestock production provided an environment in which FMD could enroll these unsuspecting actors and travel to infect hosts beyond patient-

zero's farm gates (Dondaldson et al. 2002). Beyond the 2001 FMD food scare in the U.K., inorganic actors are also capable of forming relations and influencing food scares.

Apart from viruses, chemical agents and other inorganic actors are also prominent features of some food scares. While media and celebrities were strong influences in the Alar food scare of the late 1980s, it was the relations inhabiting the apple production actor-network that prompted growers to enroll Alar. Coupled with the demand for unblemished fruit by consumers, the mass storage of apples and their shipment over thousands of miles from orchard to retailers facilitated a need for an apple that would not ripen too quickly and would thus remain firm and red throughout the journey (Herrmann et al. 1997). Alar is a growth regulating chemical that inhibits an enzyme necessary for production of a plant growth hormone, slowing the aging (ripening) of the fruit (Currey and Lopez 2010). After observing this relation between Alar and the chemistry of apples, apple growers enrolled Alar as an important actor for the production of the "perfect" fruit – one that will arrive on shelves ripe and blemish-free (Hermann et al. 1997). In laboratory experiments exposing rats to Alar, however, it has adverse relations with rat physiology ultimately resulting in cancer (Hermann et al. 1997). While the level of exposure remains a contentious issue, the research finding that Alar produced cancer in rats was enrolled by the National Resource Defense Council and other groups critical of conventional agriculture in order to build an anti-Alar discourse coalition aimed at removing its use in fruit production (Hermann et al. 1997). The Alar scare and the associations between the actors that produced it is important because it bares similarity to the 2012 LFTB food scare.

Two significant nonhuman actors inhabiting the 2012 LFTB food scare actor-network were the organic actor E.coli, a bacterium, and an inorganic chemical actor, ammonia. Three significant factors about these actors make them worthy of discussion within the 2012 LFTB food scare: 1) it was the relations of the ground beef actor-network that were favorable for E.coli and ultimately necessitated the enrollment of ammonia, 2) both actors were enrolled by the pro- and anti-LFTB discourse coalitions.

The structure of relations within the conventional ground beef actor-network, including within LFTB production, are a favorable set of associations for E.coli to enroll actors and thus multiply. First, conventionally produced ground beef consists of meat from multiple cattle carcasses, so if one carcass is harboring E.coli then one contaminated carcass can contaminate a large amount of ground beef product when mixed with the meat from other uncontaminated carcasses (Beef Checkoff 2014). Second, both ground beef and LFTB are made from trimmings from the outsides of steaks, roasts, and other prime cuts of a cattle carcass (Aubrey 2012; Beef Checkoff 2014). According to Dr. Don Schafer, food scientist at Rutgers University, these “pieces that are being cut away from the outside of the meat” are more likely to harbor bacteria like E.coli (Aubrey 2012). Grinding trimmings together can mix the bacteria throughout the product and pose a danger to humans if consumed (USDA FSIS 2013). From an actor-network perspective, the grinding process can be viewed as an act of translation where the E.coli can express its agency because human actors have given it a space in which to act. Thus it is not necessarily the E.coli that alone poses a danger, but the way humans have ordered beef (through grinding) so that E.coli can enroll human hosts. If the ground beef is formed into a patty or loaf and not cooked throughout, the E.coli will survive and can then enroll

a human host upon consumption and spread throughout the gastrointestinal tract of the consumer. This increased susceptibility of ground beef to E.coli contamination and consumption within ground beef (and LFTB) led BPI to search for a method to kill the bacteria. The consumer demand for ground beef is thus what, at least partially, can be said to facilitate the propagation of E.coli. Since it would mean loss of profit, the solution is not to reorder the network to exclude ground beef, but to utilize a technology that can prevent E.coli organisms from exercising their agency.

Since the conventional ground beef actor-network is such a favorable set of relations for E.coli, BPI needed a strategy to ensure E.coli could not survive, reproduce, and ultimately enroll, and thus sicken, human hosts. Using ammonia as a processing agent in the production of LFTB was BPI's answer to making the ground beef actor-network less favorable to the spread of E.coli bacteria. Ammonia gas (i.e. anhydrous ammonia) is sprayed on LFTB prior to freezing to raise the pH level of the product and by doing so make it a less favorable habitat for E.coli bacteria (Beef Products Incorporated 2012[c]). Without the mitigation of E.coli using the ammonia or some other means, it is unlikely that LFTB could be used in ground beef production as the USDA has a zero-tolerance policy for many toxic E.coli bacteria (USDA 2011). In the 2012 LFTB food scare, both of these nonhuman actors, E.coli and ammonia, were enrolled by pro- and anti-LFTB discourse coalitions to support their respective framings of LFTB and the scare.

E.coli was primarily enrolled by the pro-LFTB discourse coalition as a dangerous bacteria for which BPI had a method of preventing within the ground beef actor-network. Nick Roth, Director of Engineering at BPI and son of founders Eldon and Regina Roth,

explained that E.coli is “one of the most deadly pathogens that we deal with today” and that it is “a real problem in the entire food industry that” everyone in the industry needs to “work together to combat” (Beef Products Incorporated 2012[h]). BPI used the E.coli and the dangers it presents to humans as a way to highlight the steps they take to ensure food safety, including their “hold and test” program and enrollment of ammonia to treat the product. As a male narrator in their “Ammonia in Foods” video explained, “One company, BPI, came up with an innovation that slightly elevates the ammonia already present in the beef. Their reason? E.coli” (Beef Products Incorporated 2012[i]). BPI framed the role of ammonia as a “natural” and necessary agent to mediate the enrollment of ground beef by E.coli bacteria. In their video “Ammonia in Foods,” for example, BPI highlighted the fact that the human “body produces about 4200 milligrams of ammonia every day” and that in a cheeseburger there is “more ammonia in the bun, condiments and the cheese than the beef” (Beef Products Incorporated 2012[i]). Despite these pro-LFTB discourse coalition enrollments of E.coli and ammonia, the anti-LFTB coalition also assigned roles to these nonhuman actors which favored a more anti-LFTB enrollment.

Within the anti-LFTB discourse coalition, ammonia occupied a point of concern rather than being viewed as a “natural” food product. The concern over the use of ammonia as a processing agent may have been partially fueled by the dramatization of the LFTB production process by celebrity chef Jamie Oliver on his ABC television program, “Jamie Oliver’s Food Revolution.” In his show, Oliver poured household ammonia cleaner over a vat of beef trimmings before grinding them and throwing them into a washing machine (Oliver 2011). Obviously, household ammonia cleaner is toxic

to human consumption and thus it comes as no surprise that some consumers would have concerns over the association between ammonia and the food they eat.

Although ABC News did not enroll Oliver or his show's footage in their broadcasts, they did include numerous clips from the 2008 documentary *Food Inc.* in which filmmakers toured BPI's plant and interviewed founder Eldon Roth. Also in *Food Inc.,* however, was a discussion about the process of treating the beef with ammonia coupled with footage of a porthole at the BPI factory with clear liquid splashing against its glass. The pairing of the ammonia-treatment discussion and the footage of a porthole with the liquid set up a context where a viewer might connect the two – that the beef trimmings are washed in some kind of liquid-ammonia bath. As previously discussed, this is not how the process actually works. Nonetheless, ABC News enrolled footage from the *Food Inc.* film in their coverage of LFTB.

Consumers writing and uploading footage to ABC News expressed their concerns with wanting to know which "grocery stores" near them "do or don't sell ground beef that contains ammonia-treated pink slime" (ABC News 2012[c]). An ABC News interview with Costco's Vice President of Food Safety, Craig Wilson, also revealed concerns of consumers with Wilson remarking, "I personally don't know how I could explain to a Costco member that trim that's been treated with ammonia is in their ground beef" (ABC News 2012[b]). From this data it is difficult to ascertain the degree to which the enrollment of ammonia by BPI impacted consumers' decisions regarding their LFTB consumption. This said, it is clear from the statements from consumers and retailers, and by BPI's videos defending the use of ammonia use, that ammonia was an actor important within

the LFTB actor-network and the 2012 LFTB food scare. Moreover, it is also clear that it occupied a place neither wholly within either discourse coalition.

CHAPTER FIVE
- Analysis: Problematizations -

Problematizations

> Problematization: Moment of translation where key actors propose certain framings of a problematic situation (the actors involved, their identities and reciprocal relationships) and the strategies to resolve it (alliances to be established, necessary detours and translations) (F. Schneider et al. 2012:244).

Whenever controversies ensue, there are a variety of "obligatory passage points" (Gray and Gibson 2013:85) through which actors, especially the primary warring network-building actors, must pass. These are points of friction – the specific points of contact along which the embattled actors aim to assert the frame of reality that is most favorable to their supported order of an actor-network. Problematization is the point in the translation process where these obligatory passage points are revealed. Regardless of the "objective facts" which may be presented, problematizations are a battleground of the subjective where network-building actors "propose certain framings of a problematic situation (the actors involved, their identities and reciprocal relationships) and the strategies to resolve it (alliances to be established, necessary detours and translations)" (Schneider et al. 2012:244). While the term "moment" is often used to describe the various stages of the translation process, it is important to note that problematization, like other stages in translation, is an ongoing event with new obligatory passage points arising, closing, and being revisited at any time and, oftentimes, simultaneously. What is important in this analysis, then, is not necessarily *when* these events occurred, but *how* they occurred.

The key problematizations making up the 2012 LFTB food scare controversy are varied, somewhat unresolved, and range in the approaches and strategies actors employed to address them. Primarily, network-building actors utilized language, actors, and imagery to support their pro- and anti-LFTB discourse. As detailed in Table 2, the key problematizations of this analysis ranged from the definition of LFTB as beef to the role of LFTB in "feeding the world." These various problematizations supported either the pro-LFTB discourse coalition's primary discourse that consumers should have no concern about eating LFTB or the central anti-LFTB narrative that LFTB is an issue worthy of consumer concern. Table 2 also displays that not all problematizations were equally supported or given equal attention by each discourse coalition. While the pro-LFTB discourse coalition problematized LFTB as an "environmentally sustainable" product, for example, anti-LFTB actors gave no attention to the products environmental impacts. The following analysis lays out the various problematizations, alternatively conceptualized as 'secondary discourses', which each pro- and anti-LFTB discourse coalition used to support the primary discourse over consumer concern.

Table 2. Problematizations – Primary and Secondary Discourses

Primary Discourse		
Type	**Pro-LFTB Problematizations**	**Anti-LFTB Problematizations**
Concern with LFTB	Consumers should not be concerned about LFTB	Consumers should be concerned about LFTB
Secondary Discourses		
Definition as "beef"	LFTB is beef	LFTB is not beef
Safety	Lean finely-textured beef (LFTB) is safe	Is LFTB safe?
Health	LFTB is a healthy and nutritious beef product.	LFTB is not as nutritious as ground beef
Cost	LFTB reduces the price of ground beef for consumers.	LFTB cheats consumers
Environmental sustainability	LFTB is an environmentally-sustainable beef product.	
Feeding the World	LFTB is part of the solution to "feeding the world."	

Defining LFTB as Beef

"Food" is a socially constructed category representing pieces of material culture we ingest generally for the purpose of sustenance and pleasure. What people define as "food" has no real objective basis and therefore what some cultures view as an everyday gustatory delight, other cultures may writhe in disgust at simply the thought of eating the very same item. The very premise of popular television programs like the Travel Channel's "Bizarre Foods with Andrew Zimmern" is built around the fact that food is a social construct – one culture's "bizarre" is another culture's "delicacy" (Travel Channel 2014). Beardsworth and Keil pointed out that when we consume food, "we are also consuming meanings and symbols" ((2001:51), but these meanings and symbols are sometimes met with competing interpretations (e.g. controversies surrounding animal rights vegetarianism, genetically modified organisms, raw milk, etc.). This subjective

quality of food provides ample space for debate and controversy as various stakeholders jockey to exert control over discourse that favors their gustatory position. The 2012 LFTB controversy is no exception as the anti- and pro-LFTB discourse coalitions formed opposing problematizations of LFTB. While the pro-LFTB coalition held that LFTB is "100 percent beef," the anti-LFTB discourse questioned this claim and problematized LFTB's beef designation as a concern for consumers.

Beef is beef?

The framing of LFTB by the anti-LFTB discourse coalition most closely resembled that of an adulterant – or a substitution of a high-quality product, ground beef, with a lower-quality constituent. According to US Federal Law 21 U.S. Code § 342(b), one form of adulteration is by the "absence, substitution, or addition of constituents" other than those constituents advertised or included in the listed ingredients of an item (Cornell Law School 2014). Public concern with food adulteration has a long and tenuous history stretching back to the early 1820s when a publication by chemist Frederick Acum revealed "the use of copper to color pickle's green, the use of sulfuric acid to 'age' beer, the use of verdigris to give a green bloom to dried hedgerow leaves to pass them off as tea, and the use of red lead to color the rind of cheese" (Beardsworth and Keil 2001:151). Nearly a century later in 1906, Upton Sinclair published his exposé of the unsanitary conditions pervading Chicago's meat-packing industry *(*Wilde 2013). Sinclair's muckraking novel spawned a subsequent government study commissioned by President Theodore Roosevelt, and ultimately influenced the passing of the Federal Pure Food and Drug Act of 1906 (Wilde 2013). Included in the Federal Pure Food and Drug Act was language that outlawed "adulterated and misbranded foods" (Wilde 2013:164).

Despite this milestone legislation that attempted to rationalize definitions of food, the term “adulterant” is abstract enough to allow for ample controversy. Additionally, some substances in food, like the ammonia used in LFTB, are classified as “processing agents” by the United States Food and Drug Administration and thus do not require listing on any labels (U.S. Food and Drug Administration 2014). The abstract nature of food and food ingredients thus provide fertile ground for political conflict.

While the pro-LFTB discourse coalition produced slogans like “Beef is beef!” and “Dude, it’s beef!” to support their framing of LFTB as “100 percent ground beef,” the label overwhelmingly favored by the anti-LFTB coalition was “pink slime.” This term was enrolled by the anti-LFTB discourse coalition in place of “lean finely-textured beef” as well as employed in ABC News graphics as detailed in Figure 8 below.

Figure 8: "Pink Slime" Graphic in ABC News Report

In the above broadcast, ABC News correspondent Jim Avila reported that Safeway, the second largest grocery retailer in the U.S., stopped using “pink slime” in their ground beef because of “considerable consumer concern” “even though the USDA and food

industry experts agree that lean finely-textured beef is safe and wholesome" (ABC News 2012[f]). Avila also detailed that "critics" contended:

> Seventy percent of all store-bought ground beef contained pink slime, but since ABC News exposed its widespread use, many grocery stores have told shoppers their meat counters are free of the mixture. Safeway now joins Publix, HEB, Whole Foods, and Costco promising their ground beef is additive-free. No pink slime (ABC News 2012[f]).

These statements not only demonstrate the use of the label "pink slime" by ABC News, but also reveal the way in which ABC News and the anti-LFTB discourse coalition were defining the term. According to the anti-LFTB discourse coalition, LFTB was "pink slime" more than "ground beef" because it was, as Avila mentioned above, an "additive" and not "pure ground beef" (ABC News 2012[f]). ABC News and the anti-LFTB discourse problematized the definition of LFTB as "beef" as a point of concern and made suggestions that it was perhaps more appropriately viewed as an undisclosed low-quality additive and, though they never employed the term, an adulterant.

From their very first broadcast covering LFTB on March 7th, 2012, *ABC World News*' Diane Sawyer referred to LFTB as a "cheaper filler" used to "pad" ground beef. The label of "filler" was used to describe LFTB in all fourteen of the ABC News videos (ABC News 2012[a]). Through claiming that LFTB is a "filler" to "pad" ground beef, ABC News suggested that ground beef contains ingredients not representative of its portrayal by BPI and labelling practices. Though not explicitly stated as such, ABC News' charge of "padding" seems to suggest the ground beef consumers buy was adulterated by the substitution of some of the ground beef for a "lower quality" and "cheaper" constituent, LFTB (Cornell Law School 2014). ABC News supported this discourse through enrolling other actors who corroborated their claim, including organic

butcher Joshua Applestone who declared that ground beef "should be whole muscle ground, made into a patty and put into a freezer" and described the making of LFTB as "an unnatural process" (ABC News 2012[b]). ABC News also supported the frame of LFTB as a low-quality adulterant through highlighting the use of LFTB in dog food. As ABC News' Senior National Correspondent Jim Avila explained:

> Gerald Zirnstein grinds his own hamburger these days. Why? Because this former USDA scientist, now whistleblower, knows that seventy percent of the ground beef we buy at the supermarket contains something he calls "pink slime." Beef trimmings that were once used only in dog food and cooking oil now sprayed with ammonia to make them safe to eat and then added to most ground beef as a cheaper filler. It was Zirnstein who in a USDA memo first coined the term "pink slime." And is now coming forward to say, 'he won't buy it' (ABC News 2012[a]).

Through his association of LFTB with dog food, Avila raised questions about the quality and designation of LFTB as "food" fit for human consumption. Additionally, ABC News questioned the exclusion of LFTB from the label and questioned whether the labeling of ground beef containing LFTB is necessary.

In an interview with Janet Riley, Senior Vice President of the American Meat Institute, ABC News correspondent Jim Avila asked "what's being hidden here?" to which Riley firmly responded "What are you asking me to put on the label? It's beef! It's on the label. It's a beef product, it says beef, this is beef! So we are declaring it, it's beef!" (ABC News 2012[b]). In the ABC News broadcast "Tips for Checking Your Beef" (ABC News 2012[c]), Avila also provided advice for consumers when examining labels of their ground beef:

> [K]now this, if your meat is stamped "USDA ORGANIC," it's pure meat. No questionable filler. But everything else is suspect say critics, because pink slime does not have to appear on the label (ABC News 2012[c]).

Avila's reference to LFTB as a "questionable filler" while designating LFTB-free beef as "pure meat" problematizes LFTB as something other than beef. Avila's concerns with the labelling of the product arose again at a press conference held at BPI headquarters. The conference included governors, academics, and other pro-LFTB actors. During the question and answer portion of the conference, Avila asked if LFTB is not considered an additive then "why is it not sold as a standalone product? Why must it be added to fresh ground beef? Isn't that the very definition of additive?" (Beef Products Incorporated 2012[d]). Craig Letch, BPI's Director of Food Safety, explained that it was a "very appropriate question" and that it is not sold as a standalone product because it has too fine of a "texture" for consumer tastes (Beef Products Incorporated 2012[d]). When Avila asked once more why there is no label for LFTB, Governor Terry Branstad (R – IA) angrily replied "Because it's beef, but it's leaner beef! Which is better for ya! You don't get it!" (Beef Products Incorporated 2012[d]). These tense exchanges represent a synthesis of the struggle between anti- and pro-LFTB discourse coalitions to control the way LFTB was defined in public discourse. They also represent the chasm between the problematizations employed by these two discourse coalitions.

"Dude, it's beef!"

Lean finely-textured beef falls under the United States Department of Agriculture's designation as "meat derived by advanced meat/bone separation and meat recovery systems" and since it does not contain "more than 150 milligrams of calcium per 100 grams product" it can be labelled "beef" (USDA FSIS 2013[b]). When this definition was problematized as a point of concern by the anti-LFTB discourse coalition, pro-LFTB actors worked to alleviate consumer concerns or suspicions that LFTB was

anything but “100 percent beef.” The pro-LFTB discourse coalition thus problematized anti-LFTB actors’ labelling of LFTB as anything other than beef as resulting from a misinformed idea of the product. BPI and other pro-LFTB actors deployed slogans like “Dude, it’s beef!” to assert that LFTB is indeed beef.

The two slogans employed by the pro-LFTB discourse coalition to support the definition of LFTB as beef were “Dude, it’s beef!” and “Beef is beef!.” While “Beef is beef!” was used predominantly on BPI’s pro-LFTB website, Beefisbeef.com, “Dude it’s beef!” was the more ubiquitous slogan. The slogan appeared mostly in signage and other media produced by BPI, but also made appearances in news media and even satirical news media with a mention on a broadcast of the satirical news program, *The Colbert Report* (Colbert 2012) (Figure 9).

Figure 9. "Dude, it's Beef!" Slogan on *The Colbert Report*

Additionally, “Dude, it’s beef!” was the prevailing mantra of the 2012 pro-LFTB rally at Iowa State University. The slogan was printed on signs and, as seen in Figure 10,

giveaway t-shirts worn by pro-LFTB discourse coalition actors such as Republican Governor Terry Branstad of Iowa (Beef Products Incorporated 2012[k]).

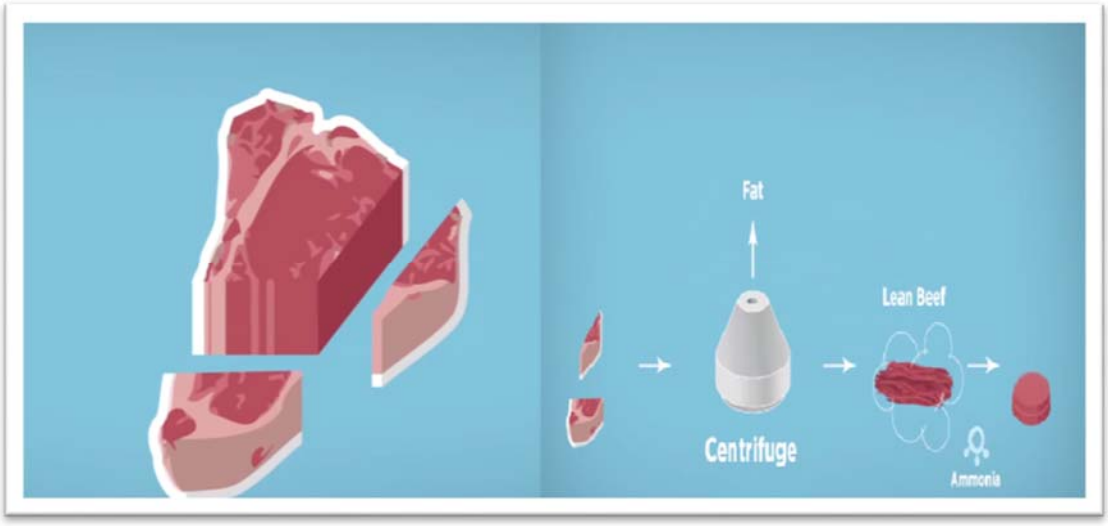
Figure 10. Governor Terry Branstad (R - IA) Wearing "Dude it's Beef!" Shirt

"Dude, it's beef!" went beyond the Iowa State University rally to make frequent appearances elsewhere in the pro-LFTB discourse. Other politicians outside of Iowa echoed the message during the March 30th, 2012 press conference at BPI's headquarters. Lieutenant Governor of Nebraska, Rick Sheehy, and Governor of Kansas, Sam Brownback, proclaimed "Dude, it's beef!" when rounding out their words of support during speeches at the press conference (Beef Products Incorporated 2012[d]). The phrase "Dude, it's beef!" is significant because it is the slogan that embodied the pro-LFTB claim that, as stated by Lt. Gov. Sheehy, "lean finely-trimmed [sic] beef is 100 percent beef" that "goes through a USDA-approved, science-based process" (Beef Products Incorporated 2012[d]). The slogan was employed as a counter-narrative to the anti-LFTB "pink slime" claim which questioned whether LFTB could really be defined as "100

percent beef." This slogan, however, was not the only strategy employed by the pro-LFTB coalition to support their claim.

Beyond simply asserting that "Dude, it's Beef!," the pro-LFTB discourse coalition also worked to demonstrate that although it may undergo a somewhat different process than other beef products, LFTB is technically ground beef. One way the pro-LFTB discourse coalition communicated this point was through associating the production of LFTB with the production of other beef products. Images and animations like those seen in Figure 11 were paired with dialog from scientists and other actors to draw parallels with the production of ground beef, steaks, and other cuts of meat. These animations and the interviews accompanying them erved as short educational lessons on BPI's process of manufacturing LFTB.

Figure 11. LFTB Process Animation



As Dr. Jim Dickson, Professor of Animal Science at Iowa State University, explained:

> What the BPI process does is separate the lean meat from the fat. And it's the same type of idea as ground beef. It's not an intact steak, it's not a New York strip

> on the plate, but it's really no different than the ground beef that you buy (Beef Products Incorporated 2012[f]).

In a separate video, Dr. Dickson also refuted the label of LFTB as "filler" explaining that "filler is" like the "bread crumbs" combined with ground beef to make "meatloaf" (Beef Products Incorporated 2012[g]). Dickson remarked that LFTB is "not filler," but "BPI's product is 95 percent lean beef" (Beef Products Incorporated 2012[g]). In addition to the animations and remarks by Dr. Dickson, pro-LFTB actor Janet Riley, Vice President of Public Affairs for the American Meat Institute, also provided a demonstration using cuts of beef to clear up what pro-LFTB actors saw as "misinformation [about LFTB] floating around in media coverage and on the internet" (Beef Products Incorporated 2012[c]). First, Riley explained to consumers what the pro-LFTB discourse coalition felt LFTB was not:

> Lean finely-textured beef isn't substandard beef. It's not scraps scooped from the floor. It's not so-called salvage meat. It's not inedible meat that we somehow make edible. And it's not dog food. But here's what lean finely-textured beef is. Now when a big beef carcass is cut down into smaller cuts, chunks of lean tissue and fat result. We call them trimmings. Now, some trimmings are lean like these here. Some trimmings have more fat like these here. And historically it was nearly impossible to recover beef from a trimming like this. A surgeon's skill would have been required to separate the meat from the fat (Beef Products Incorporated 2012[c]).

After reviewing the process of making LFTB, Riley explained that LFTB is beef, but "it does have a finer texture, which is why it's called lean finely-textured beef" and that "nutritionally it's equal to ground beef," "it tastes like beef," and "under a microscope it looks like other beef" (Beef Products Incorporated 2012[c]). Riley also explained the protein profile of LFTB as being the "same two proteins that are found in all beef…from filets and steaks to ribs, roasts, and ground beef. As well as in lean finely-textured beef" (Beef Products Incorporated 2012[c]). These points made by Riley and other pro-LFTB actors not only served to alleviate any questioning of LFTB as beef among consumers,

but also formed part of their legal defense when laying out their defamation lawsuit against ABC News.

When outlining their defamation case against ABC News, one of the key places in which BPI felt they had been defamed was with regard to the questioning of LFTB as beef. BPI and their chief counsel, Dan Webb, asserted that ABC News made over "250 false statements" about BPI and LFTB (Beef Products Incorporated 2012[l]). Webb asserted that these statements fell in "nine categories," including one category of statements through which BPI asserted ABC News claimed that "the product is not beef or meat," but "only some kind of filler" or "substitute" for ground beef (Beef Products Incorporated 2012[l]). Webb also restated BPI's point that "all of the protein" in LFTB is "made from muscle meat, every bit of it" and not "inferior connective tissue" or cartilage (Beef Products Incorporated 2012[l]). Webb's statements coupled with those of Janet Riley and other actors in the pro-LFTB discourse coalition demonstrate the great significance placed upon any questions of LFTB as beef.

Translating their definition of LFTB as beef through legal action demonstrated that BPI's definition went beyond slogans and demonstrations. BPI was willing to defend the definition in a court of law and thus formally challenge any description of LFTB that counters their pro-LFTB discourse. Since BPI's lawsuit against ABC News is ongoing, it is difficult to gauge whose definition will ultimately prevail. Furthermore, any analysis of this nature is beyond the scope of this study. What is significant, however, is how the discursive battle over the definition of beef highlights the way in which the abstract nature of "food" can provide fertile ground within which conflicts take root.

While LFTB is defined as "beef" via the scientific rationality of governmental bodies like the USDA, animal and food scientist academics, meat trade associations like AMI, and industrial agrifood processor BPI, this is clearly not the only definition of significance in terms of LFTB's existence within the ground beef actor-network. Statements from anti-LFTB actors like organic butcher Joshua Applestone and Costco's VP of Food Safety Craig Wilson represent the existence of counter-narratives to the view of beef (and food) as solely a scientifically-defined product. Though a definition of beef was never fully articulated by the anti-LFTB discourse coalition via the videos in this analysis, it is clear that what constituted "beef" for anti-LFTB actors is more than its protein or biochemical similarities to other cuts of beef, as suggested by Janet Riley and Jim Dickson.

Safety of Lean Finely-Textured Beef

While eating food certainly provides pleasure for most consumers, it is also a source of anxiety and ambivalence (Beardsworth and Keil 1999). What makes food an especially distressing product for consumers is its corporeality. Through the act of eating, food is ingested and becomes part of the eaters' body. Eating provides obvious nutritional and life-sustaining benefits, but it is also an opportunity for the eater to introduce potentially damaging pathogens, chemicals, or other harmful foreign agents into her/his body. The possibility of illness or death from eating an item of food has led consumers to view food through a lens of suspicion. The suspicion with which consumers view all foods is not uniformly distributed as some foods are viewed as more suspect than others. Meat is perhaps one of the most suspect items of food (Atkins 2008).

Apart from concerns regarding animal welfare, consumer concern with meat stems from its material characteristic as a highly perishable (decaying) piece of animal flesh. If improperly preserved, either through drying/dehydration, curing, or refrigeration, the bacterial and fungal actors playing natural roles in meat's decomposition process are candidates for an eater's ingestion. Immediately after the death of an animal, the flesh of the animal's carcass (the meat) begins to decompose and invite a host of bacteria including *Clostridium botulinum* (bacteria that causes botulism), salmonella, and *Escherichia coli*. If ingested by the eater, these bacteria can cause mild-to-severe illness and possibly even death.

Consumers and meat industry personnel have long been aware of and concerned with the presence of harmful microorganisms in meat and, as documented by Susanne Friedberg's (2009) book *Fresh: A Perishable History*, the meat industry has gone to great lengths (including transcontinental import/export of ice) to preserve meat from decomposing and fostering pathogens. Ultimately, efforts to prevent bacterial, fungal, and/or viral contamination of meat and other commercial foods became rationalized through scientifically-developed safety controls and institutionalized into a system of regulatory practices overseen by government bodies like the Food and Drug Administration (FDA) and the United States Department of Agriculture (USDA). Despite this highly complex structure of regulatory oversight and improved safety technologies, contemporary outbreaks of large-scale food poisoning, along with the food scares that sometimes accompany them, persist. In the same year as the 2012 LFTB food scare, Jimmy John's Gourmet Sandwich, a major chain of sandwich restaurants, divested

its use of bean sprouts as they were linked to at least five major mass food poisoning food scares (Flynn 2012).

Within the consumer-producer relationship resides a high level of trust that consumption of a food item will not induce a negative physiological reaction for the consumer. Even if no known negative outcomes directly resulting from human consumption of a product exists, the possibility alone, as in the 1980s Alar food scare, is enough to reduce consumer trust in a product and/or producer and thus reduce or eliminate their consumption of the suspect product. During the 2012 LFTB food scare, the question of safety also arose as the anti-LFTB discourse coalition raised consumer concerns about the product. Anti-LFTB actors problematized LFTB as a possible safety concern, while BPI and other pro-LFTB actors aimed to problematize food safety as the primary driver behind the production and success of LFTB.

Is LFTB Safe?

As with many other aspects of LFTB, the anti-LFTB discourse coalition raised some questions regarding the safety of LFTB. While never stating bluntly that LFTB was not safe or that it was connected with any illnesses, anti-LFTB discourse from ABC News included subtle discussion of safety concerns regarding LFTB. When discussing the process of making LFTB, ABC News correspondent Jim Avila remarked that LFTB was “once used only in dog food and cooking oil” and was “now sprayed with ammonia” to “make it safe to eat, and then added to most ground beef as a cheaper filler” (ABC News 2012[a]). This statement highlights a possible concern that LFTB might be an unsafe

food because it requires ammonia treatment. Beyond this statement, however, there were no other remarks specifically directly questioning the safety of the product.

It is possible that anti-LFTB actors' reference to the product as "cheaper filler" or "pink slime" in some way led to consumers questioning the safety of the product. Though this is not discernable without further analysis of the impact of these descriptions upon consumer perceptions of the product, Pro-LFTB actors certainly felt that the "pink slime" label implied the product was unsafe. BPI's Director of Food Safety Craig Letch and BPI's chief counsel Dan Webb expressed that the way in which ABC News portrayed LFTB via language like "slime" and "filler" was congruent with describing the product as, according to Webb, "unsafe for human consumption" and thus caused alarm among consumers about possible safety concerns of the product (Beef Products Incorporated 2012[l]). The pro-LFTB discourse coalition rejected any safety concerns over the product and instead problematized LFTB as existing because of its positive impact upon the safety of ground beef. Additionally, any exclusion of LFTB from the ground beef agrifood network, according to pro-LFTB actors, constituted a threat to consumer safety.

LFTB is Safe

Although subtle and indirect, the problematization of LFTB as questionably safe by anti-LFTB actors elicited a strong pro-LFTB counter-problematization of LFTB as a product that embodies food safety. BPI and the pro-LFTB discourse coalition utilized two key narratives to establish the safety of LFTB: 1) LFTB is safe because it is undergoes extensive testing and regulation, and 2) it is a necessary innovation in modern

food safety technology. As with their definition of LFTB as beef, each of these narratives employed reliance on scientific rationality as the preferred knowledge to improve food safety. Further solidifying their scientifically rationalized claims, BPI enrolled academic scientists and USDA regulators into the pro-LFTB discourse coalition to support their problematization of LFTB as a model product of modern food safety science.

One way BPI problematized LFTB as safe was through highlighting their testing procedures and the regulatory system within which LFTB is produced. In a BPI-produced video discussing their testing procedures, Director of Food Safety Craig Letch explained how BPI exceeded regulatory expectations through testing for more strains of E.coli than what is required by federal law. Letch detailed that BPI tested for:

> …non-0157 S. tex. That's an additional six strains of E.coli. BPI's hold and test program consists of sampling out of each and every box of product. That product is stored in the freezer and not released in our system until negative test results are received from our third party laboratories (Beef Products Incorporated 2012[m]).

While detailing BPI's testing procedure, Letch's narration was accompanied by footage of lab equipment and gleaming laboratories where workers donning lab coats, protective eyewear, and surgical gloves were testing LFTB for pathogens (See Figure 12). These kinds of images provide visual reinforcement for the framing of LFTB as product undergoing rigorous scientific testing for safety. In addition to utilizing this scientific imagery, BPI also enrolled key regulators to vouch for the safety of the product.

Figure 12. Scientifically Safe: Laboratory Worker at BPI

Actors in the pro-LFTB discourse coalition reasoned that LFTB was safe because it was approved by and produced under the scientific scrutiny of government regulation, namely by the United States Department of Agriculture. The USDA approval of LFTB was frequently touted as a strong indicator of LFTB's safety. Both the Lieutenant Governor of Nebraska, Rick Sheehy, and the Governor of Iowa, Terry Branstad, emphasized the USDA approval of LFTB as a marker of safety. Governor Branstad remarked that because LFTB "consistently achieves high levels of safety," the "USDA allowed it into the School Lunch Program" and that "Secretary of Agriculture Tom Vilsack" confirmed "USDA's continued support for the product" (Beef Products Incorporated 2012[d]). Secretary Vilsack did indeed appear with Governor Branstad at a "joint press conference on beef safety" where Vilsack remarked that he could "guarantee you that if we felt that this [LFTB] was unsafe, we wouldn't allow it to be marketed and we wouldn't allow it to be part of our school lunch program" (Beef Products Incorporated 2012[n]). The USDA's support for the safety of LFTB went beyond Secretary Vilsack's words of support. During a BPI press conference on March 30th, 2012, USDA

Undersecretary of Food Safety, Dr. Elizabeth Hagen, also supported the safety of LFTB via the system of regulation under which it is produced:

> …let me first talk about food safety because that is an issue I'm personally responsible for at USDA. It's a big one and we take it very seriously this mission of food safety. Our public health policies are based on science and they're executed through inspection. We have over seven-thousand inspectors in over sixty-two hundred meat, poultry, and egg products establishments every single day. Those of you who took the tour today probably saw some of our inspection team there. They're there, they are inspecting the food, they are reviewing food safety plans, food safety systems, ensuring that they're working the way that the company says that they're working, they are watching what's going on, they may be sampling and testing product. They are ensuring that those products meet the highest most rigorous food safety standards that we at the USDA set for the American consumer. One, they are sure that that is the case, then, and only then, do they apply the USDA mark of inspection. When we put that mark of inspection on a product, we stand behind, it means something. And it has meant something for over 100 years. So lean finely-textured beef is a product that undergoes that degree of scrutiny every single day. The process itself and the processing aid used to make this product have long been considered safe both by the FDA and the USDA. But that is something separate starting with the process that we feel is safe is something separate from determining that the product coming out of those plants on a daily basis is safe for American consumers. And that's why we're there. That's why we're there every single day doing those things that I just talked to you about. The mark of inspection means something and a product needs to earn it. If a product does not earn the mark of inspection, it does not receive it, and it never reaches consumers. It's really that simple. So that's the food safety piece (Beef Products Incorporated 2012[n]).

While clearly meant to support the problematization of LFTB as a safe product, Undersecretary Hagen's speech also captures the scientific rationality and trust in complex regulatory structure characteristic of modern agrifood systems. Similar themes were echoed when other pro-LFTB actors went beyond simply explaining the safety of LFTB via regulation and oversight and ventured into warnings of excluding technologies like LFTB.

Apart from exalting the extensive regulations and testing LFTB undergoes as a measure of its safety, pro-LFTB discourse also framed LFTB as a necessary innovation

for in modern food safety technology. The process of framing LFTB as a necessary answer to food safety problems began first with pro-LFTB actors outlining in the dangers of modern meat production – namely the human illness-inducing E.coli bacterium. In their videos "Ammonia in Foods" and "Innovations in Food Safety," BPI first lays out the dangers of E.coli followed by framing LFTB as their answer to E.coli contamination in beef. Nick Roth, engineer at BPI and son of Eldon and Regina Roth, identified E.coli 0157:H7, a particular strain of the bacteria, as "one of the most deadly pathogens that we deal with today" that the food industry needs to "work together to combat" (Beef Products Incorporated 2012[h]). It is at this point in both the "Innovations in Food Safety" and "Ammonia in Foods" videos that BPI enrolled a lawyer who specializes in foodborne illness lawsuits, Bill Marler, to explain how E.coli can cause "devastating illness," "death," and can "leave victims scarred for life" (Beef Products Incorporated 2012[h]). As displayed in Figure 13, these warnings were sometimes accompanied by animations of E.coli bacteria and data detailing the number of deaths connected with E.coli (Beef Products Incorporated 2012[h]).

Figure 13. Animated E.coli Warning

After laying out the dangers of consuming E.coli contaminated foods, BPI then framed LFTB as the innovation needed to combat the problem of E.coli-contaminated ground beef. Marler, for example, explained that the "most important thing" that BPI's product will do is "save lives" (Beef Products Incorporated 2012[h]). Other pro-LFTB actors like Dr. Jim Dickson warned that "it would be a mistake for us to have a technology, whether it's ammonia or anything, that's available to us that can reduce the risk of E.coli O157 in humans and then not use it" (Beef Products Incorporated 2012[h]). Here Dickson not only framed LFTB as safe, but also problematized the exclusion of LFTB from the ground beef agrifood chain as potentially dangerous to consumer health. Dickson was not the only pro-LFTB actor to warn against a food system that rejects a technological innovation like LFTB. As discussed later, Dr. John Floros, Dean of the College of Agriculture at Kansas State University, also raised concerns with failing to adopt such technological innovations in the food system. Additionally, some pro-LFTB

actors felt that excluding LFTB from the ground beef supply may endanger the health of consumers.

Health of LFTB

Debates over the health of consuming red meat, primarily beef, consistently populate mass media and scholarly literature (Flynn 2012; McAfee, McSorley, Cuskelly, Moss, Wallace, Bonham, and Fearon 2010). While various past studies have connected eating red meat with increased risks of heart disease, cancer, and other physiological maladies, there is also a healthy portion of literature highlighting the benefits of red meat consumption (McAfee et al. 2010). Even within the ABC News broadcasts included in this analysis, one segment discussing LFTB was accompanied by an interview with a physician discussing a Harvard School of Public Health study positively linking red meat consumption and cancer risk (ABC News 2012[f]). Despite the breadth of literature and media coverage, red meat consumption has no monopoly over corporeal controversy. As detailed in Janet Colson's (2011) book *Taking Sides: Clashing Views in Food and Nutrition*, media coverage and academic journals are full of health debates covering everything from the consumption of bread and carbohydrates to eggs and butter. Though not growing to the scale of the red meat debate, the 2012 LFTB food scare added another food item to the list of nutritional controversies with actors in the anti-LFTB discourse coalition framing the health of LFTB as questionable and pro-LFTB actors framing the absence of LFTB in ground beef as a health concern.

Is LFTB Healthy?

Similar to their coverage of LFTB's safety, the anti-LFTB discourse coalition made very few direct claims regarding the healthfulness of LFTB. The claims that were made problematized the health of LFTB as a possible consumer concern and were interconnected with ABC News' questioning of LFTB's designation as beef. When discussing LFTB in ABC News' first broadcast covering the product, correspondent Jim Avila referred to LFTB as "more like gelatin and not as nutritious as ground beef" (ABC News 2012[a]). To support this problematization of the product, ABC News enrolled former BPI Quality Assurance Manager, Kit Foshee (ABC News 2012[a]). According to ABC News, Foshee claimed that the product was less nutritious "because the protein comes mostly from connective tissue, not muscle meat" (ABC News 2012[a]). When referencing the nutrition of LFTB, Foshee claimed that "it will fill you up, but it's not going to do you any good" (ABC News 2012[c]). Apart from repeated references to Foshee's comments, ABC News made no other direct references to the nutritional aspects of LFTB. Indirectly, it is possible that the references to LFTB as "pink slime," "filler," and "low quality" were perceived by some viewers and consumers as reflecting negatively upon the nutritional quality of the product. Without an analysis of consumer preferences, these possibilities are impossible to discern and thus beyond the scope of this study. Despite the limited direct references to the nutritional quality of LFTB by anti-LFTB actors, it is clear that their problematization of LFTB was that it is nutritionally questionable. While limited, this framing elicited a strong rebuttal from the pro-LFTB discourse coalition.

LFTB is Healthy

Actors within the pro-LFTB discourse coalition heavily contested any discourse questioning the nutritional quality of LFTB. In their attempt to counter any consumer concerns regarding the health of LFTB consumption, pro-LFTB actors framed the production of LFTB as a response to consumer demand for healthier lower-fat ground beef. Additionally, the pro-LFTB discourse coalition insisted that its lower fat content makes ground beef an overall healthier food for consumers, and warned of the dangers of not including LFTB within the American ground beef supply. Governors, USDA's Undersecretary of Food Safety, and BPI employees successfully enrolled in the pro-LFTB discourse coalition communicated these points within the BPI-produced YouTube videos.

The ground beef that is sold in supermarkets comes in a variety of lean to fat ratios, running from 73 percent to 96 percent (USDA 2012). The percentage of "lean" indicates the fat content of the ground beef – with lower percentage of "lean" meaning more fat and higher percentage of "lean" meaning less fat content. Actors within the pro-LFTB discourse coalition problematized LFTB as a product demanded by consumers because consumers wanted "healthier" beef with a lower fat content. Responding to a question asked by ABC News correspondent Jim Avila during a press conference at BPI headquarters in Dakota Dunes, SD, Dr. Gary Acuff, Professor of Animal Science at Texas A & M, explained that:

> I think it's important to realize that you have all these different lean and fat levels. This gives us the opportunity to combine this and produce what the consumers want. I mean, you and I are old enough to remember, you went to the store and you could find regular ground beef and maybe something they call "lean ground

> beef." And now look what we have, you know, 96% lean, 80% lean, they're all different types of ground beef that are produced now because we have the options to mix this together. But offering that as a single option, it's not a product that grinds up and produces a hamburger patty, it's a product that allows us to adjust the lean and fat levels. But it is exactly lean beef (Beef Products Incorporated 2012[d]).

Here Acuff makes the case the "consumers want" lean beef, so LFTB is a product that fill this consumer need. Additionally, Acuff also responds to the questions of LFTB's labeling as "beef" through asserting that LFTB is "exactly lean beef." At a later press conference where BPI announced their lawsuit against ABC News, Craig Letch, BPI Director of Food Safety, added support to Acuff's statements. Letch claimed that not only was LFTB a response to consumer demand, but it was also a product offering consumers a healthier option:

> In the 80s consumers demanded leaner ground beef and lean finely-textured beef played a great role is supplying consumers with that. This business grew from that demand, and when I think back to my own childhood, you couldn't buy 93, 96% lean ground beef at the retail markets. It was ground beef and that's all you could get. Now consumers have healthy alternatives. Through innovations and ingenuity, we were able to deliver that to consumers (Beef Products Incorporated 2012[l]).

Letch's statement also revealed another narrative used to frame LFTB as a healthy product – that removing LFTB from ground beef might pose a threat to consumer health.

While anti-LFTB discourse coalition problematized the inclusion of LFTB as a possible negative impact to the nutritional quality of ground beef, pro-LFTB actors problematized the exclusion of LFTB from the ground beef supply as a possible threat to consumer health. Since mixing LFTB with ground beef can result in an overall lower-fat product, dependent upon the ratio of LFTB to ground beef, pro-LFTB actors reasoned that excluding LFTB from ground beef results in a fattier and less-healthy product. In an interview for Rural Free Delivery Television, BPI Corporate Administrator Rich Jochum

warned that ground beef without LFTB would be “less nutritious because we’re consuming a fattier product than we would be consuming otherwise” (Beef Products Incorporated 2012[j]). Pro-LFTB actor and Iowa Governor Terry Branstad echoed Jochum’s concerns when he described LFTB as:

> …95% lean. And you know we're trying to combat obesity in this country. We just had the First Lady, Michelle Obama, in Des Moines. Ten-thousand kids came and the focus was on exercise and nutrition and eating right and eating leaner products. And this is a product that meets that need (Beef Products Incorporated 2012[d])

Governor Branstad was not alone in his expression of concern for the possible health consequences of removing LFTB from the diets of children. During the same press conference at which Gov. Branstad made these remarks, U.S. Undersecretary of Food Safety Dr. Elizabeth Hagen also claimed that LFTB “allows the National School Lunch Program to offer a lower fat offering in terms of ground beef” (Beef Products Incorporated 2012[d]). Additionally, Hagen explained that even though some school districts wanted to “eliminate this product from the National School Lunch Program,” the USDA would not exclude ground beef mixed with LFTB “because [they] are comfortable with the with the safety profile, with the quality, with the nutrition content, and with the value that this product offers to the National School Lunch Program” (Beef products Incorporated 2012[d]). Collectively, these pro-LFTB statements reflect a the problematization that it is not the inclusion of LFTB in ground beef that presents a health concern, but its exclusion that would have negative consequences. Other actors like BPI Plant Manager Jay Williams warned that unless “people that want to consume leaner healthy beef act” by visiting BPI’s “BeefIsBeef.com” website and sharing the information with others, leaner “healthier” beef will be more difficult to obtain (Beef

Products Incorporated 2012[j]). Statements made by Kansas Governor Sam Brownback also reflected Williams' concerns as Brownback explained that excluding LFTB from ground beef would "drive up the price of lean beef" making it more difficult to "get people to eat better" all "because of this unmerited, unwarranted food scare, and that's what this is, it is unmerited it is unwarranted and it's a food scare" (Beef Products Incorporated 2012[d]). Brownback's comments highlight another way in which the exclusion of LFTB from the ground beef agrifood network was problematized by the pro-LFTB discourse coalition, the financial costs to consumers.

Beef Prices

Similar to the problematizations of safety and health, the issue of monetary cost was primarily waged in the context of exclusion versus inclusion of LFTB within the ground beef agrifood network. While anti-LFTB actors portrayed the negative cost to consumers as a result of the inclusion of LFTB as a constituent of ground beef, pro-LFTB actors portrayed the exclusion of LFTB as resulting in negative costs to consumers. Costs to consumers by anti- and pro-LFTB discourse coalitions were problematized in divergent ways. Following their problematization of LFTB as "lower-quality filler," anti-LFTB actors raised questions regarding whether consumers were really buying what they thought they were when purchasing ground beef containing LFTB. In contrast, the pro-LFTB discourse coalition warned that the price of ground beef would increase as retailers and buyers sought ground beef excluding LFTB.

"Economic Fraud"

The concern over cost as it was problematized by the anti-LFTB discourse coalition was strongly related to other anti-LFTB problematizations – namely, the framing of LFTB as a low-quality adulterant versus a high-quality beef product. Through questioning the nutritional quality and designation of LFTB as beef, anti-LFTB actors also questioned the whether consumers were actually getting what they thought they were paying for.

In ABC News' first "pink slime" broadcast, Diane Sawyer, head anchor for *ABC World News with Diane Sawyer*, questioned whether the ground beef that consumers purchase at the supermarket is what they "think it is?" or if it is "padded with a filler" called "pink slime?" (ABC News 2012[a]). During a subsequent broadcast, Sawyer also asked if referred to LFTB as a "kind of filler used to pump up the volume of meat" (ABC News 2012[c]). Through these statements Sawyer suggested the misrepresentation of the material constituting the ground beef that consumers purchase from food retailers. Sawyer's statements were further reinforced via additional commentary from other anti-LFTB actors enrolled by ABC News, including former-USDA employee Gerald Zirnstein. In an interview with ABC News' Jim Avila, Zirnstein labeled the inclusion of LFTB in ground beef as "economic fraud" because he thought it is "not fresh, ground beef," but a "cheap substitute being added in" (ABC News 2012[a]). As previously mentioned, ABC News also aired comments from former BPI employee Kit Foshee who made comments questioning the nutritional quality of LFTB, referring to it as "not what the typical lay-person would consider meat" and suggesting that it was primarily

"connective tissue" that would "fill you up," but "not gonna [sic] you do any good" in terms of nutritional benefit (ABC News 2012[c]).

Through their implications that LFTB is something other than beef and of low nutritional quality, anti-LFTB actors questioned whether consumers were actually purchasing the product they thought they were, ground beef, or if they were economically swindled into buying a product "padded" with something of lower nutritional quality. In contrast to these suggestions, the pro-LFTB discourse coalition warned just the opposite. Pro-LFTB actors cautioned that it was the exclusion rather than the inclusion of LFTB in ground beef that had negative economic costs for consumers.

High Price of LFTB-Free

In addition to problematizing the exclusion of LFTB from the ground beef agrifood network as both a safety and health concern, actors within the pro-LFTB discourse coalition advised that its exclusion would raise the price of ground beef for consumers. When responding to questions from the media at a BPI press conference, pro-LFTB actor Gov. Terry Branstad explained that the "problem with taking this [LFTB] off the market" is that "we end up with a fatter product that's gonna [sic] cost more that's gonna [sic] increase the obesity problem in this country" (Beef Products Incorporated 2012[d]). Governor Branstad was not alone in his concerns with costs at the press conference as Governor Rick Perry of Texas, Lieutenant Governor Matt Michels of South Dakota, and Governor Sam Brownback of Kansas all expressed concerns that the price of ground beef would increase as a result of excluding LFTB (Beef Products Incorporated 2012[d]).

The governors were not the only enrolled pro-LFTB actors to sound alarm over rising costs of ground beef. In an appearance on Rural Free Delivery Television, the Senior Agricultural Economist and Director of the Livestock Agricultural Marketing Center, Jim Robb, also expressed his concerns about the cost implications of excluding LFTB from the ground beef agrifood network for both producers and consumers. Robb stated that "fresh beef prices" were at a "record high" and that as the demand for LFTB quickly decreased, the beef that went into making LFTB had to be "reduced in price dramatically to force it into alternative market channels" (Beef Products Incorporated 2012[j]). According to Robb, the quick diversion of LFTB's source product and lower-priced sale of the product to non-LFTB producing buyers had negative impacts upon beef processors (Beef Products Incorporated 2012[j]). Robb also laid out his concerns for increased consumer costs. Robb warned that as large retailers and school districts stopped purchasing LFTB, it "raised hamburger prices to consumers" and "raised the cost of the Federal [sic] School Lunch Program" (Beef Products Incorporated 2012[j]).

The consensus among the pro-LFTB discourse coalition was that, in addition to increased risks in food safety and health, excluding LFTB from the ground beef agrifood network would ultimately hurt consumers by increasing their food costs. Safety, health, and price, however, were not the only costs with which pro-LFTB actors warned consumers should be concerned.

Environmental Sustainability

As stated earlier, pro- and anti-LFTB discourse coalitions allocated unequal attention to problematizations concerning LFTB. While pro-LFTB actors problematized LFTB as an environmentally sustainable food, for example, the anti-LFTB discourse

coalition did not address the issue of environmental sustainability as it relates to LFTB. Contested claims of the sustainability of meat production, and especially beef-production, are nothing new as it is an issue at the center of intense political debate. Especially contested is the sustainability of conventional intensive grain-fed versus organically raised grass-fed beef production (Capper 2012). Although some research highlights the sustainability of grass-fed alternative methods of beef production (Gwen 2009), other researchers have argued that conventional methods are less resource-intensive, thus more efficient, and ultimately more sustainable (Capper and Bauman 2013). Within the 2012 LFTB food scare, pro-LFTB actors fall within the purview of actors that hold the efficiencies of conventional food production and processing, at least as it relates to LFTB, as a solution to environmental sustainability.

Actors in the pro-LFTB discourse reasoned that LFTB is an environmentally sustainable product because by harvesting meat from pieces of the carcass otherwise unused for human consumption, less cattle, and thus less resources, are needed to produce ground beef with LFTB versus without LFTB. Pro-LFTB sustainability discourse included animations and illustrations as well as dialog from pro-LFTB actors. Below, Figure 14 displays an illustration produced by BPI that illustrates pro-LFTB problematizations of LFTB as increasing the affordability and sustainability of ground beef (Beef Products Incorporated 2012[a]). The title “Same Beef Different Process” highlights the pro-LFTB definition of LFTB as beef, while the remainder of the illustration claims that ground beef containing LFTB costs less money and uses less resources (i.e. cattle, corn, water, farmland) when compared with ground beef without LFTB.

Figure 14. LFTB Sustainability - "Same Beef Different Process"

Dialog from pro-LFTB actors also supported the problematization of LFTB as an environmentally-sustainable product. As Janet Riley of the American Meat Institute explained,

> [L]ean finely-textured beef is a sustainable product. Without lean finely-textured beef we would need 1.5 million additional head of cattle to make up the difference in the beef supply. In our view making sure that we harvest as much beef from an animal and waste as little as possible is just the right thing to do. It shows respect for the animal, it ensures a steady supply of beef, and it prevents waste (Beef Products Incorporated 2012[d]).

Riley's suggestion that using as much of the animal as possible coupled with the idea that it "shows respect for the animal" is reminiscent of the revival in the "nose-to-tail" eating philosophy (Henderson 2004). This "waste not" philosophy has taken root in modern "foodie" culture, people for whom food and food knowledge is a form of recreation, and is based on the idea that meat-eaters have a moral obligation, based on an animal welfare and environmentalist ethic, to consume all edible parts of a food animal (Henderson 2004; Strong 2006). Comments by other pro-LFTB actors also acknowledged

contemporary concerns with animal-welfare and sustainability in food production. Dr. Gary Acuff, Professor of Food Science at Texas A & M University, referenced these concerns and held LFTB as a technology that addresses them:

> Today we all want sustainability and environmental awareness, the beef industry has responded by improving animal welfare and increasing efficiency. Helping to make sure that we're good stewards of the life of an animal that will be used to provide food on our tables. Lean finely-textured beef or LFTB is a lean, safe, sustainable product that's been born from consumer demands over the last 30 years (Beef Products Incorporated 2012[d]).

Similar to the problematizations of LFTB as a technological solution to problems of food safety, health, and affordability, Acuff's comments reinforced the agro-industrial value of applying scientific-rationality to alleviate animal welfare and environmental sustainability concerns. Additionally, Acuff, Riley, and other actors in the pro-LFTB discourse coalition warned that in the face of a growing population, LFTB is also a necessary technological solution to help "feed the world."

Feeding the World

One of the major contemporary challenges facing agriculture and the sustainability of human life is how to provide food for the growing world population, currently at 7 billion people (Carolan 2012:181). Intertwined with the issue of global food security is also the problem of how to feed industrializing countries (e.g. China) whose appetite for meat, a particularly resource-intensive food, continues to increase as their populations experience upward socioeconomic mobility. With the world population expected to hit 9.5 billion people by 2015, Carolan estimated that "if current trends hold, we are going to have to produce twice as much animal protein by 2050 just to keep up with demand" ((2012:181). Currently livestock consume enough "basic food [e.g. wheat, maize, rice, soy] to feed the equivalent of 4 billion people" (Carolan 2012:181).

"In other words, if the world continues to eat meat at the rates that we are expecting, the world's *effective* population in 2050 will be 13.5 billion, as opposed to the 9.5 billion predicted by most models" (Carolan 2012:181). Additionally, heightened pressure for increasing meat production coupled with the resources necessary to produce meat translate to further strain on already strained resources like arable land and fresh water.

At a basic level, humans are thus faced with three choices related to meat consumption and production: 1) alter diets to include less meat, 2) increase the efficiency with which meat is produced, and/or 3) some combination of 1 and 2. Although Carolan (2012) pointed out that demand is currently outpacing improvements of efficiency in meat production, conventional food and agriculture actors, including those in the pro-LFTB discourse coalition, primarily focus on choice two (increasing efficiency) as the solution for increasing demands for meat. In other words, the dominant discourse reflects a reliance on scientific innovation to increase meat supply versus decreasing meat consumption to free up land for production of crops directly consumable by human beings.

More Meat

The "feed the world" narrative is nothing new to the industrial production of food. What is meant by "industrial" or "conventional" food production is the "capital-intensive, large-scale, highly mechanized agriculture with monocultures of crops and extensive use of artificial fertilizers, herbicides, and pesticides, with intensive animal husbandry" (Knorr and Watkins 1984 as cited in Beus and Dunlap1990:594). Conventional agribusiness corporations like DuPont and Monsanto, lobbying associations for

commodity agriculture like the South Dakota Corn Growers Association (SDCGA), the trade association the American Meat Institute, and a number of other pro-conventional agriculture actors all employ the "feed the world" narrative to support the discourse and actions of conventional agriculture (DuPont 2014, Monsanto 2014, SDCGA 2014, American Meat Institute 2011). At the heart of the "feed the world" narrative is the idea that hunger is a problem of inadequate food supply (Carolan 2012). According to conventional agriculturalists, alleviating hunger thus requires "science-based solutions" (DuPont 2014) including "investing in technology and using advanced management techniques" (SDCGA 2014) like "better seeds with higher yields" (DuPont 2014) in order to "grow more food per acre" (Charles 2013) or more head of cattle with less inputs (e.g. grain, water, land). During the 2012 LFTB food scare, LFTB was problematized as a technical solution to help "feed the world."

Along with addressing concerns over food safety, health, costs, and environmental sustainability, the pro-LFTB discourse coalition also problematized LFTB as an innovative technical solution to meeting the meat consumption demands of a growing world population. In the BPI-produced video "Innovations in Food Safety," the male narrator of the video asked the question "Why is innovation important when it comes to food?" (Beef Products Incorporated 2012[h]). BPI enrolled Dr. John Floros, Dean of the College of Agriculture at Kansas State University, and other pro-LFTB actors to answer this question. Floros explained:

> China consumes a lot more meat today than they consumed 30 or 40 years ago. And the projections are that they will continue to consume more meat 40 or 50 years from now. So not only do we have to increase the amount of food we're producing, but we also have to also produce more food with more protein such as meat (Beef Products Incorporated 2012[h]).

Floros' explanation is thus to increase meat production to meet rising demands versus a shift in consumption habits of animal products. The male narrator of BPI's "Innovations in Food Safety" video then explained that LFTB is a "safe and efficient way" of meeting the challenge of "increasing protein demands" in the context of "limited natural resources" (Beef Products Incorporated 2012[h]). Floros echoed the narrator's statements explaining that:

> Every resource we have is limited. So we must produce more food with the resources we have today. And in order to do that we're gonna [sic] need to really take advantage of every possible scientific or technological breakthrough that we can get our hands on (Beef Products Incorporated 2012[h]).

Coupled with the narrator's comments, Floros' warning suggests that the challenge of the rising demands of meat consumption and the strain it creates on resources is not a problem solved by altering consumption habits (i.e. consuming less meat), but by relying on the use of "scientific or technological breakthroughs" like lean finely-textured beef. In a separate video, Janet Riley of the American Meat Institute echoed Floros' narrative when she explained that as global population has increased, more people "move into the middle-class every day and they alter their diets to include more animal protein" because they "understand the importance of animal protein as part of their diet" (Beef Products Incorporated 2012[c]). These comments from Riley and Floros are congruent with other "feed the world" narratives employed by conventional agriculture and food production companies. The "feed the world" narrative within the context of the 2012 LFTB food scare was utilized by the pro-LFTB discourse coalition to problematize LFTB as an important technological solution to addressing the increased worldwide demand for meat.

Inclusion vs. Exclusion of LFTB

Collectively, the actors enrolled and discourses deployed by pro- and anti-LFTB discourse coalitions revealed a rift in perceptions regarding the concerns they felt consumers should have over the inclusion versus the exclusion of LFTB within the ground beef agrifood network. According to anti-LFTB actors, the inclusion of LFTB within the ground beef actor-network was an issue worthy of scrutiny and deserving of consumer concern. Anti-LFTB discourse problematized LFTB as a lower-quality adulterant, as a possible safety concern, and as less nutritious than non-LFTB ground beef.

While anti-LFTB actors raised concern over LFTB in the ground beef supply, Pro-LFTB actors problematized these consumer concerns as unwarranted and as potentially harmful to consumers. In support of this position, the pro-LFTB discourse coalition built discourse and enrolled actors aimed at alleviating consumer concerns over LFTB consumption and therefore supporting a ground beef network including LFTB. Juxtaposed with the anti-LFTB warnings, the pro-LFTB discourse coalition problematized the exclusion of LFTB from ground beef as the true worry for consumers. Pro-LFTB actors framed LFTB as “100 percent beef” and warned consumers that the elimination of LFTB from the ground beef agrifood network meant increased risks in the safety, health, affordability, and environmental sustainability of ground beef. Additionally, pro-LFTB actors employed a “feed the world” narrative to frame LFTB as a technological solution to meeting the growing demands of worldwide animal-protein consumption.

These observations are the outcome of following network-building actors through their activities during the 2012 LFTB food scare. The network-building activities of BPI and ABC News included deploying discourses and enrolling actors supportive of their preferred orders of the ground beef actor-network. While these findings do accomplish the major goals of this study, they do not explain how the actors selected their discourses or the actors they chose to enroll. Moreover, given the political context of the food scare (e.g. the BPI v. ABC News lawsuit), it was difficult to question the actors directly to gain these insights. Despite these limitations, there is a theoretical framework within which network-building activities can be couched in order to explain the actions of BPI and ABC News. Through employing Bruno Latour's conceptualization of Pierre Bourdieu's "habitus," this study provides a way to explain the network-building practices of BPI and ABC News.

CHAPTER SIX
- Discussion -

Discussion

Actor-network theorists insist that researcher studying relations not impose any a priori “frameworks,” “structures,” or “themes” upon the actors followed in an ANT analysis (Latour 2007). Instead, Latour (2007) suggests that researchers follow actors and examine their network-building practices (e.g. discourses, actors enrolled) in order to describe them as they are expressed by the actors’ own accounts. This said, actor-network theorists also see the value in employing theoretical frameworks to make sense of empirical generalizations (Venturini and Guido 2012). Actor-network theorists recognize the value and possibilities of multiple theoretical avenues, but insist that these "speculations must follow data and not the other way around” (Venturini and Guido 2012:2).

As an actor-network analysis, this study followed network-building actors, BPI and ABC News, to provide an account of their practices as they attempted to establish their preferred order of the LFTB actor-network. Beyond this description of network-building practices, the remainder of the study focuses on applying theory to explain these practices. Through merging Bruno Latour’s reconceptualization of Bourdieu’s concept of habitus with scientism and moral panic, this study suggests that the network-building practices of pro- and anti-LFTB actors can be understood through envisioning them as resulting from two distinct habituses: 1) BPI’s scientist habitus, and 2) ABC News’ moral panic habitus.

Latour, ANT, and Habitus

Employing Pierre Bourdieu's theory of habitus as reconceptualized by Bruno Latour provides a way to better understand the rift between the practices and discourses employed by BPI and ABC News during the 2012 LFTB food scare (Ritzer 2011). The concept of habitus is congruent with this actor-network analysis of the 2012 LFTB food scare for three primary reasons: 1) the theory dismisses the agency (micro-) and structure (macro-) dualism – a dualism also dismissed by ANT, 2) it is a theory aimed at explaining relations – also congruent with the goals of ANT, and 3) it is a constructivist theory that views society as the work of actors constantly working, through their practices, to build, transform, destroy, and rebuild relations.

Habitus in this study is employed as it is reconceptualized within the framework of actor-network theory by Bruno Latour (2007). While Latour recognized the value of Bourdieu's concept of habitus, in his book, *Reassembling the Social* (2007), Latour reconceptualized habitus in three important ways. First, while Bourdieu viewed habitus as a "structuring structure" or particular orientation toward viewing reality, Latour viewed habitus as discrete skills or competencies (Kindley 2010). In Bourdieu's version of habitus, individuals internalize the objective conditions (or structure) around them and these conditions become part of their subjective structure unconsciously shaping their behaviors, ideas, etc. According to Bourdieu, for example, a person's position within the class structure imbues them with a certain class habitus including tastes and types of capital (e.g. cultural capital) (Ritzer 2011).

Rather than viewing habitus as the product of some external force working upon the individual, however, Latour (2007) viewed actors as much more reflexive and

selective. According to Latour (2007), actors exercise this selectivity through "plugging into" specific competencies or skills appropriate for particular situations (207). Latour illuminated this idea through the metaphor of downloading "plug-ins" in order to view web content:

> When you reach some site in cyberspace, it often happens that you see nothing on the screen. But then a friendly warning suggests that you might not have the right plug-ins' and that you should 'download' a bit of software which, once installed on your system, will allow you to activate what you were unable to see before. What is so telling in this metaphor of the plug-in is that competence doesn't come in bulk any longer but literally in bits and bytes. You don't have to imagine a 'wholesale' human having intentionality, making rational calculations, feeling responsible for his sins, or agonizing over his mortal soul. Rather, you realize that to obtain 'complete' human actors, you have to compose them out of many successive layers, each of which is empirically distinct from the next. Being a fully competent actor now comes in discreet pellets or, to borrow from cyberspace, patches and applets, whose precise origin can be 'Googled' before they are downloaded and saved one by one (2007:207).

Through this metaphor of a person requiring a 'plug-in' to access web content, Latour also highlighted the dependency actors have upon one another in exercising agency.

This is the second of Latour's reconceptualizations of habitus – that it is not simply a set of competencies from some objective social context upon which an individual can draw in a given situation, but a skill or competency that is an exercise of agency just as dependent upon other actors. In other words, without other actors the habitus is not something an individual can necessarily exercise. Latour's metaphor of a consumer navigating a supermarket helps to illuminate this point:

> Even when one has to make the mundane decision about which kind of sliced ham to choose, you benefit from dozens of measurement instruments that equip you to become a consumer—from labels, trademarks, barcodes, weight and measurement chains, indexes, prices, consumer journals, conversations with fellow shoppers, advertisements, and so on. The crucial point is that you are sustaining this mental and cognitive competence as long as you subscribe to this equipment. You don't carry it with you; it is not your own property. You might have internalized it somewhat, but even for that feat of internalization you need to download another

> plug-in! If you try to make a rational calculation away from such equipment—deciding for example to buy Universal Panoramas in order to become the World Company—you might have nothing more to make your 'macro-decision' with than rough estimates on the back of an envelope; you will no longer possess the competence to be rational at all. Here again, it makes much more realistic sense to bypass entirely the two sites: the market forces and the individual agent (2007:210).

Third, and somewhat interrelated to his second reconceptualization of the habitus, Latour viewed the habitus as something that involves constant work. For Latour, people do not simply soak in some objective "social context" that becomes a deeply embedded part of their habitus. Rather, the habitus "is not 'in' the agent, it is those many layers of competence builders that we have to ceaselessly download in order to gain some sort of ability for a while" (Latour (2007:212). Thus the habitus requires active maintenance on the part of the actor. It requires an actor to constantly "plug-in" to relations with various other actors to form a supportive scaffold.

This idea of routine maintenance most closely mirrors Bourdieu's idea of 'practice' with the difference being that practice for Bourdieu's *agent* is a subconscious act, while practice for Latour's (2007) *actor* is a conscious, active, and networked engagement (Ritzer 2011). It is this upkeep of habitus that became the starting point for this analysis. Following the practices of the two network-building actors, BPI and *ABC News*, through their translation processes revealed differences between the habitus of these actors and the translation process through which they support them. I have conceptualized these different habitus as the "scientist habitus" and the "moral panic habitus."

Scientist Habitus

The concept of the scientist habitus is proposed as an explanation of the discourses deployed and actors enrolled by pro-LFTB network-building actor BPI during the 2012 LFTB food scare. The term "scientist" describes the reliance of BPI and other pro-LFTB actors on scientism or the ontological preference of scientific knowledge as constituting the authoritative worldview around which the ordering of relations within agrifood systems should take place (Busch 2000; Sorrell 1994). Busch and others at the Michigan State University School of Agrifood Governance and Technoscience suggest an increasing reliance of modern food systems on the utilization of scientism to build regulatory standards and support industrial food-production practices (Konefal and Hatanaka 2010). Within the context of food scares, actors subscribing to scientism view "scientific knowledge" as the "ultimate arbitrator for settling controversies" (Skaldany 2008:185).

Through this lens of scientism, other forms of knowledge (i.e. indigenous and local knowledge) are seen as subservient since they do not extol science as the ultimate way of knowing. Those food scholars critical of scientism point out that this viewpoint threatens a democratic process within food production because it silences the voices of consumers and other stakeholders who do not share the scientist position (Busch 2000; Delind and Howard 2008; Skaldany 2008). Whether debating safety, health, cost, or the definition and labelling of a food, actors with a scientist habitus plug into relations that support, or appear to support, a scientific position with regard to these controversies (DeLind and Howard 2008). The analysis of the discourses deployed and actors enrolled by pro-LFTB actors within the 2012 LFTB food scare revealed that utilizing the concept of "scientist habitus" is one useful way to explain their actions.

In accordance with Latour's reconceptualization of habitus, describing BPI as having a scientist habitus lends an explanation to the way in which BPI "plugged in" to discourses and other actors to "download" a scaffolding of support for their scientistic view of the agrifood system and LFTB's place within it. When examining the problematizations of BPI and other pro-LFTB actors, it is apparent that they relied heavily upon claims made under the authority of scientific rationality. The pro-LFTB problematizations of LFTB were mediated through a scientist habitus where pro-LFTB actors plugged into scientific discourse to support the inclusion of LFTB within the food system as providing a technological solution to problems of food safety, health, food costs, environmental sustainability, and even food supply issues. When these problematizations were challenged, the pro-LFTB discourse coalition mounted resistance based upon their superior scientific relation with food. Furthermore, the actors enrolled by network-building actor BPI are also representative of a scientific habitus in that many of the actors held the roles of credentialed food scientists or worked within the rationalized regulatory system held as the standard for scientifically evaluating food before it can be sold to consumers. Perhaps the most visible example of BPI's scientist habitus was with regard to their support of their problematization of LFTB as beef.

Discourse concerning the definition of LFTB revealed the way in which the actors within the pro-LFTB discourse coalition had a relationship with beef mediated by scientific understanding. Actors within the pro-LFTB discourse coalition defined LFTB as ground beef in accordance with its protein content and molecular constituents. Janet Riley of the American Meat Institute explained that LFTB is beef because it contains the "same two proteins that are found in all beef" and that "under a microscope it looks like

other beef" (Beef Products Incorporated 2012[c]). When their definition of beef was challenged, pro-LFTB actors also mounted resistance relying upon scientific rationality. Responding to criticisms of LFTB from celebrity chef Jamie Oliver, Professor of Food Science Dr. Gary Acuff questioned Oliver's understanding of the "biochemical makeup" of beef and charged that Oliver's explanation of LFTB "is not science, it's entertainment" (Beef Products Incorporated 2012[f]). Dr. Acuff and other scientific food experts were enrolled by BPI to mobilize support for the pro-LFTB definition of LFTB. Through plugging into these scientists, BPI accessed their scientific authority and used it to problematize any definition of LFTB outside scientific rationality as misinformed anti-LFTB propaganda. The question of LFTB's safety followed a similar pattern.

When discussing the safety of LFTB, pro-LFTB actors problematized LFTB as safe and as a technological solution to the problems of food safety related to ground beef. Primarily, BPI asserted that their scientific management of safety coupled with the rationalized evaluation and approval of the product by government regulatory bodies was scientific proof of LFTB's safety. In BPI's "Innovations in Food Safety" video, imagery of BPI scientists testing LFTB samples is coupled with dialog from actors that reinforce the scientifically-evaluated safety of LFTB. When describing the safety of LFTB, Dr. Gary Acuff explained:

> I mean, everything in the plant has been built to enhance sanitation. You know, it's all stainless steel, it's, it's extremely clean. I mean, to see how much they've engineered safety and sanitation into the whole process – it's a magnificent facility (Beef Products Incorporated 2012[h]).

Acuff's comments highlight the idea that safety is not only important to BPI, but something that is scientifically engineered into the production of LFTB. In another video highlighting the safety of LFTB, BPI Director of Food Safety Craig Letch reassures

consumers that “not a single pallet of product is released to consumers until the test results are back from our third party labs” (Beef Products Incorporated 2012[m]).

This reliance of BPI on third-party certification (TPC) is an example of the rationalized food safety controls characteristic of modern food production (Konefal and Hatanaka 2010) and another illustration of safety as scientifically-defined. In addition to third-party certification, BPI also touted the USDA approval of LFTB as a marker of safety. BPI enrolled Dr. Elizabeth Hagen, USDA Undersecretary of Food Safety, to support this discourse. In a BPI press conference, Dr. Hagen explained that the “USDA mark of inspection” is an indicator that LFTB has met “rigorous food safety standards” “based on science,” so consumers should not have concern about the safety of the product (Beef Products Incorporated 2012[d]). When the safety of LFTB was questioned, pro-LFTB actors like Dr. Jim Dickson warned that “it would be a mistake” to not utilized a food safety “technology” like LFTB as failing to do so represents a threat to food safety (Beef Products Incorporated 2012[h]). Not only is LFTB safe, but, according to Dr. Dickson and the pro-LFTB discourse coalition, it is thus also a technological answer to problems with ground beef safety. These examples of discourse and actors enrolled are again suggestive of BPI’s scientist habitus at work in their effort to problematize LFTB as scientifically safe.

Problematization of the healthfulness of LFTB is another area in which BPI’s scientist habitus was enacted. Again, discourse employed by BPI and other pro-LFTB actors focused on the regulatory hurdles of LFTB as a marker of its health benefits to consumers. Dr. Elizabeth Hagen of the USDA highlighted that the USDA’s “health policies are based on science” and framed LFTB as a healthier option because it is a

"lower fat offering in terms of ground beef" (Beef Products Incorporated 2012[d]). Secretary of Agriculture Tom Vilsack echoed these statements when he explained that LFTB is a "leaner beef product," which "is one of the reasons why we [the USDA] have made it a staple of the school lunch program" because "we are concerned with obesity levels" and want to make sure "youngsters are receiving a product that is lean and contains less fat" (Beef Products Incorporated 2012[n]). Lean finely-texture beef was thus problematized as a technological solution to tackling the issue of obesity in the United States.

According to BPI and pro-LFTB actors, the cost of food is also a problem which LFTB helps to alleviate. Within the modern industrialized food system, producing as much food at the lowest cost is of great concern (Anderson 2009). BPI problematized LFTB as a technological solution to help achieve this goal through lowering the overall prices of ground beef for consumers. Some pro-LFTB actors, like Governor of Kansas Sam Brownback, warned that excluding LFTB from ground beef would "drive up the price of lean beef" and ultimately result in consumers selecting "higher fat content ground beef" (Beef Products Incorporated 2012[d]). Economist Jim Robb was enrolled as a technical expert to provide further support for this problematization with his analysis of the negative economic impact of the 2012 LFTB food scare upon the global beef market, the National School Lunch Program, and for consumers (Beef Products Incorporated 2012[j]). Robb expressed that the exclusion of LFTB from the ground beef actor network would also take "industry resources away from food research" and thus the "bottom line, as an economist" is that "both the producers and consumers have been hurt in this

process" (Beef Products Incorporated 2012[j]). Clearly BPI and pro-LFTB actors viewed LFTB as a key technology for reducing food prices.

BPI's scientist habitus was also apparent in their view of LFTB as a technological solution to issues of environmental sustainability. Scientists enrolled by BPI including Dr. Gary Acuff spoke on behalf of LFTB proclaiming that the "beef industry" has responded to issues of "environmental awareness and sustainability" through "increasing efficiency" and producing a "sustainable product" (Beef Products Incorporated 2012[d]). According to Janet Riley of the American Meat Association and BPI, LFTB translates to the use of "1.5 million less cattle," less grain, less water, and less land used to produce the same amount of beef without LFTB (Beef Products Incorporated 2012[a]; Beef Products Incorporated 2012[d]). BPI thus problematized LFTB as a technology aimed at increasing environmental sustainability of beef production. Perhaps somewhat juxtaposed to this claim, however, was also the view of an increased demand for beef production and LFTB's role in helping to meet this "need."

Finally, LFTB was also problematized as a technological solution for addressing problems with global food insecurity. BPI enrolled Dr. Jim Dickson of Iowa State University and Dr. John Floros of Kansas State University to deploy discourse on world population growth and the accompanying increased demand for food – including animal products like beef (Beef Products Incorporated 2012[i]). Dr. Dickson explained that due to world population growth, "we need to double the world's food supply in the next twenty to thirty years" (Beef Products Incorporated 2012[h]). Dr. Floros echoed this statement, but also added that "we need to produce more food with more protein, such as meat" and that in order to do that "we're going to need to take advantage of every scientific or

technological breakthrough that we can get our hands on" (Beef Products Incorporated 2012[h]). Floros' statement reflects the view that what is needed to address the increasing pressure on the food supply is the use of technological innovations like LFTB rather than a reduction in more resource-consumptive foods like beef.

Following Latour's assertion that habitus is like a "plug-in" through which actors invest in certain practices and relations, this analysis suggests that the plug-ins downloaded by BPI were strongly reflective of scientism and thus a "scientist habitus." This scientist habitus was apparent in the discourses deployed and actors enrolled by BPI in the 2012 LFTB food scare. By asserting that LFTB was ground beef because it fit a certain protein profile and looked the same as ground beef "under a microscope," BPI preferenced a technical scientific definition of beef and revealed their relation with beef as mediated by scientific knowledge. Though ABC News and anti-LFTB actors provided alternative conceptualizations of LFTB, these were resisted by BPI with their claims that these alternate definitions were "misinformation" because they were not utilizing principles of science to arrive at their conclusion. Additionally, BPI laid out a variety of food-related problems (i.e. food safety, health, food costs, environmental sustainability, and food security) and problematized LFTB as a necessary technological innovation for addressing these concerns. Finally, the BPI's selection of actors enrolled into the pro-LFTB discourse coalition also reflect a scientist habitus in that many of the actors support and embody scientism through their discourse and positions as scientific experts within the realm of food and agriculture.

Moral Panic Habitus

Latour's reconceptualization of habitus is also useful as a way to construct an explanation for the practices of ABC News during the 2012 LFTB food scare. Somewhat juxtaposed to the scientist habitus of BPI, the discourses and actors accessed and deployed by ABC News are conceptualized as reflective of a "moral panic habitus." Two primary characteristics of ABC News' practices support this idea of the moral panic habitus: 1) practices employed by ABC News to "plug in" to consumer concerns regarding LFTB including establishing a "feedback loop" of public concern, and 2) evidence that ABC News employed a strategy of exaggeration in their portrayal over the concerns of LFTB. Prior to delving into either of these, however, it is necessary to provide a brief background on the concept of "moral panic."

Along with the Alar food scare of the late 1980s, some sociologists and might categorize the 2012 LFTB food scare as a moral panic. The concept of moral panic helps to categorize a specific type of collective reaction to something perceived to be a threat by a significant group of people. The world "panic" denotes both the considerable size of the reaction and that the reaction is disproportionate to the actual measurable threat or within the context of other existing demonstrable threats not yielding such reactions (Goode and Ben-Yehuda 2009). The panics are "moral" in the sense that they involve a perceived threat to a value seen as significant by a large group of people (Goode and Ben-Yehuda 2009). Goode and Ben-Yehuda (define moral panic as a:

> [S]care about a threat or supposed threat from deviants or "folk devils," a category of people who, presumably, engage in evil practices and are blamed for menacing a society's culture, way of life, and central values (2009:2).

Goode and Ben-Yehuda (2009) also highlighted that the word "scare" emphasizes that "the concern over, fear of, or hostility toward the folk devil is *out of proportion* to the actual threat that is claimed" (2).

The term "scare" here has a nuanced difference from how it is employed in "food scare" as food scares may include both overreactions to a perceived problem (e.g. bacterial or viral contamination, harmful chemical agent, etc.) and reactions to an actual measurable widespread contamination or danger in the food system. Additionally, within a food scare the "folk devil" or deviant targeted as responsible for the panic is not necessarily a "person" or even group of people (e.g. a corporation), but rather the chemical, bacteria, virus, or even food item that is perceived as the threat. Though beyond the purview of this study, this is perhaps where actor-network theory, a theory that extends agency beyond human beings, can contribute to expanding the concept of moral panic. Lean finely-textured beef or "pink slime" was the folk devil of concern in the 2012 LFTB food scare, but this concern cannot be examined without another important component of the moral panic – the mass media.

According to Goode and Ben-Yehuda (2009), the mass media, and especially the news media, are an important component of moral panics as they help to "inflame" and "generate public concern" (90). The mass news media have "institutionalized the need for moral panics" (Goode and Ben-Yehuda 2009:90) as they depend upon plugging into public concern, another component of moral panics, in order to "sell papers, entertain readers, and generate further news" (Garland 2008:12). Generating concern is especially effective if it is regarding a latent concern already existing among the public and if the media can establish a "feedback or interactive relationship" (Goode and Ben-Yehuda

2009:91) with the public through which their coverage actively feeds and is fed by public concern. This feedback loop of concern allows media not only to plug into and generate public concern, but also to expand or continue coverage because the panic is kept alive by the public concern that the news media has helped generate. It is possible that the increased availability of lines of quick electronic communication via online social media has only strengthened these feedback loops of concern. The coverage of LFTB by ABC News certainly mirrors a "feedback loop of concern" with ABC News using their coverage to generate concerns and then further publicize the concerns amongst consumers regarding LFTB in ground beef.

Past research suggests that consumers have a highly ambivalent relationship with food (Beardsworth and Keil 1997; Lockie 2006). While consumers enjoy the flavor and other benefits of food, they are also aware of the possibility that eating could introduce harmful substances into their bodies with sometimes devastating physiological consequences (Beardsworth and Keil 1997). Through food scares, news media are able to harness these latent consumer concerns with food and utilize them to generate viewers and possibly even amplify concern (Lockie 2006).

The suggestion that ABC News possesses a "moral panic habitus" implies that they may also have used the "pink slime" story as a way to benefit from the gustatory concerns of consumers. During the 2012 LFTB food scare, LFTB provided ABC News with an opportunity to plug into a sensitive issue for consumers and thus enroll consumer attention over the issue of "pink slime" in their ground beef. Beyond simply alerting consumers to the presence of LFTB, ABC News also constructed a feedback loop of concern through which they used consumer concerns to generate further concern and

broadcast material covering LFTB. ABC News solicited responses from viewers through stating "If you have questions about "pink slime," email us at ABC.WorldNews@abc.com" (ABC News 2012[a]). After viewers submitted their questions, ABC News remarked that they were "flooded with questions" and aired various video clips of concerned consumers asking questions like "Which grocery stores near me do or don't sell ground beef that contains ammonia-treated pink slime?" (ABC News 2012[c]).

These consumer questions were reproductions of ABC News' previously aired concerns and provided the subject matter for a subsequent broadcast. ABC News' next broadcast titled "Pink Slime: Tips for Checking Your Beef" provided consumers with instruction regarding how to tell if the ground beef in their supermarket contained "questionable filler known as pink slime" (ABC News 2012[c]). This activity is indicative of the feedback loop of concern discussed by Goode and Ben-Yehuda (2009) as a significant component of moral panics. Furthermore, Goode and Ben-Yehuda (2009) suggested that when generating these concerns, news media also employ exaggerations of the threat posed by the folk devil.

In the midst of a moral panic, Goode and Ben-Yehuda (2009) charge that mass media "flourish on at least a measure of sensationalism or exaggeration" (102). This claim of exaggeration is not some subjective opinion of whether claims are in-fact accurate, but instead a measurable aspect of the moral panic (Goode and Ben-Yehuda 2009). That is, exaggeration can actually be quantified in comparing empirical observation with subjective claims about the threat of a folk devil. According to Goode and Ben-Yehuda, media exaggeration is defined as:

> (1) Inflating the size, scope, danger, harm, and seriousness of the phenomenon reported; (2) making untrue claims about phenomenon; (3) devoting considerably more attention to a less serious or dangerous phenomenon than to a more serious one; (4) devoting more attention to a phenomenon at a point in time when it is less serious than when it is more serious; (5) devoting more attention to a phenomenon among certain groups in which it is less common than those in which it is more common (2009:101).

Additionally, to exaggerate a story the media plug into discourse comprised of "sensational headlines, melodramatic vocabulary, and deliberate heightening of the elements in the story that the press and the public consider news" (Goode and Ben-Yehuda 2009:101). Within the context of food scares, this might involve selective focus on the harm of a particular bacteria or processing agent without detailing the context of such harms – i.e. probability of exposure, level of exposure, etc. Sometimes, as in the case of government reaction during the 2001 foot and mouth scare in the rural United Kingdom, this exaggeration and the resulting amplification of concerns may spur strong reactions by consumers or governments that have negative consequences far beyond that of the actual measured perceived threat (Donaldson et al. 2001).

Another way in which ABC News' practices were reflective of a moral panic habitus was through their use of exaggeration as a way to generate concern. First, despite safety concerns raised by ABC News, there were no clear indications that any consumers had been physiologically harmed from consuming LFTB and no publications of research to suggest that something in the product presented a threat. While the 2012 LFTB food scare did partially unfold blackboxed processes of ground beef production, none of this information indicated that LFTB was a clear immediate threat to consumer health.

Second, the language that ABC News employed arguably sensationalized certain aspects of the story to exaggerate concerns over LFTB. In their very first broadcast,

Diane Sawyer of *ABC World News* explained that a "whistleblower has come forward to tell consumers about the ground beef a lot of us buy at the supermarket. It is what we think it is? Or is it padded with a filler the whistleblower calls "pink slime"? (ABC News 2012[a]). Sawyer's labelling of USDA scientist Gerald Zirnstein as a "whistleblower" who has "come forward" is somewhat of an exaggeration because Zirnstein's concerns with "pink slime" were only revealed through an internal email that was obtained by a Freedom of Information Act request from a New York Times story on ground beef (Moss 2009). Zirnstein was enrolled by ABC News, not the other way around.

Finally, ABC News also used editing techniques that made certain aspects of their story appear more shocking than they might be if presented differently. When ABC News raised ethical questions regarding the approval of LFTB by former Undersecretary of Agriculture Joann Smith, correspondent Jim Avila highlighted that when Smith left her job at the USDA she went to work for Iowa Beef Processors (IBP), a "principal supplier of BPI" Iowa Beef Processors (ABC News 2012[a]). In Smith's post-USDA role, ABC News correspondent Jim Avila highlighted that, as displayed in Figure 15, she "at least $1.2 million dollars over 17 years" (ABC News 2012[a]). This monetary figure might seem shocking at first glance, but when Smith's total compensation is divided by her 17 year tenure at IBP, her average annual compensation comes out to around $70,500 – a much less shocking figure when compared with the "$1.2 million over 17 years" laid out by ABC News.

Figure 15. ABC News Raises Ethical Question about LFTB Approval

Though the purpose of the study was to reveal the process by which network-building actors built discourse and enrolled actors during the 2012 LFTB food scare, the concept of moral panic habitus is suggested as a possible explanation for these practices employed by anti-LFTB network-building actor ABC News. Goode and Ben-Yehuda (2009) highlighted the important role mass news media plays in generating and amplifying concerns as well as utilizing a strategy of exaggeration to amplify these concerns to foster a moral panic. The moral panic habitus thus helps to characterize the way in which ABC News utilized already present latent consumer concerns to capture consumer attention and enroll it to provide further content for their "pink slime" broadcasts. This represents the actor-network employment of habitus in that ABC News' agency is viewed as only possible because they were able to "plug in" and "download" these consumer concerns for further support of their anti-LFTB discourse. Their moral panic habitus thus was not "possessed" by them, but something enabled via their relations with consumers.

Another expression of the moral panic habitus was through ABC News' use of exaggeration to support their anti-LFTB discourse. ABC News accessed sensationalized investigative-journalist language like "whistleblower" and claimed that they were covering a "startling investigation" in order to convey the importance and urgency of their message to consumers. This concept of a moral panic habitus, however, is not without limitations.

Limitations

Explanations for the discourses deployed and actors enrolled by network-building actors in the 2012 LFTB food scare are limited by the data utilized in this study. Both the concept of the scientist habitus and moral panic habitus are based upon a qualitative content analysis of videos from ABC News and BPI. This data is limited in its ability to interrogate and explain the way in which network-building actors made decisions about their discourse. Why, for example, did BPI enroll a team of food science and animal science professors to appear in their videos? Though the statements of these academics appear closely intertwined with examples of scientism found within the dialogue of top BPI employees, drawing these connections from the videos does not allow for a rich multidimensional exploration of the associations between BPI and these academics.

Similar critiques can be made of the practices employed by ABC News. One major question that looms is why ABC News chose to construct and broadcast a story on LFTB? Though this study suggests the fact that food is a latent concern for consumers, this conclusion is still likely only part of the attraction of covering LFTB. Interviews with these pro- and anti-LFTB network-building actors would help provide answers to

these questions and thus more detailed explanations of their network-building practices. Despite these concerns, the reality is that while ABC News and BPI are in litigation it is difficult to gain access to these data. Perhaps future research might focus on interviewing key ABC News and BPI actors after legal matters are resolved between the two parties.

CHAPTER SEVEN
- Conclusion –

Conclusion

Among the more durable conflicts over genetically modified organisms, environmentally sustainable agriculture, and ethical concerns of animal foods, food scares stand out as the fads of food and agriculture controversies. Food scares swiftly capture the nervous attention of large groups of people, but exit just as quickly from the airwaves of the mass news media and the consciousness of consumers. Despite their more intermittent impacts upon some actors, food scares can make more durable changes upon the agrifood networks in which they occur. As a result of the 2012 LFTB food scare, the USDA introduced new LFTB labels and changed their ground beef purchasing policies within the National School Lunch Program to include choices for states who wished to opt-out of using ground beef products containing LFTB. Additionally, various major grocery retail chains also divested of their LFTB use in their ground beef products.

These shifts in public and private ground beef policy reduced the demand for LFTB and consequently negatively impacted the sales of LFTB producer BPI. Reduced sales led BPI to suspend production at three of its four facilities and although their Kansas facility reopened in November of 2014, two plants remain closed as the demand for LFTB remains below pre-scare levels. The significant changes in the ground beef agrifood network resulting from the 2012 LFTB food scare display a need for the attention of sociologists studying controversies in food and agriculture. Developing a better understanding of these controversies contributes to understanding the impacts of food scares upon changes in contemporary food policy.

Summary of Findings

The 2012 LFTB food scare opened the black box of the LFTB actor-network and revealed a variety of actors enrolled and discourses deployed to support pro- and anti-LFTB orderings of the ground beef agrifood network. In answer to my first question, this analysis revealed two discourse coalitions formed around each network-building actor including an "anti-LFTB" discourse coalition constructed by ABC News and a "pro-LFTB" coalition formed by BPI. Discourse coalitions were classified as "anti" and "pro" based upon their divergent problematizations of LFTB. In answering the second question, actors forming each discourse coalition represented two different key problematizations (primary discourses) of LFTB: 1) anti-LFTB actors problematized LFTB as a cause for consumer concern, and 2) pro-LFTB actors problematized LFTB as unworthy of consumer concern.

At the center of the anti-LFTB discourse coalition was ABC News, the network-building actor who enrolled a variety of actors into the anti-LFTB coalition including former USDA inspectors ("whistleblowers"), food writers, journalists, and food retailers. Similarly, BPI, the network-building actor forming the pro-LFTB coalition, enrolled trade associations, academics, and politicians to support their discourse.

Other actors, however, were not as easily placed within either coalition. Government regulators, consumers, and nonhuman actors like E.coli and ammonia demonstrated an overlap of both coalitions as they were enrolled by each in different ways. In addition to enrolling these actors, each network-building actor also deployed a

variety of secondary problematizations to support their primary discourses over raising (anti-LFTB actors) or alleviating (pro-LFTB actors) consumer concerns.

Discourse coalitions were divided over two primary discourses with anti-LFTB actors problematizing LFTB as a product worthy of consumer concern, while pro-LFTB actors problematized concerns over LFTB as unwarranted and worked to form discourses and enroll actors to alleviate concerns. Primary discourses were supported by a variety of secondary problematizations of LFTB. Both discourse coalitions formed competing problematizations of the definition, safety, and health of LFTB.

Not all problematizations of LFTB were balanced between both coalitions. The pro-LFTB discourse coalition also problematized LFTB as an innovation that addresses environmental sustainability concerns as well as worries over world food supply shortages in the face of population growth. While problematizations of the anti-LFTB discourse coalition were based upon raising concerns about the inclusion of LFTB within ground beef, pro-LFTB problematizations warned that the real concern for consumers is the exclusion of the product from the food supply. According to pro-LFTB actors, food safety, health, environmental sustainability, and world food supply would all be compromised by the exclusion of LFTB from ground beef.

To explain the practices of network-building actors within the anti- and pro-LFTB discourse coalitions, the third goal of this research, I used Latour's (2007) reconceptualization of Bourdieu's habitus. Latour (2007) viewed habitus as a useful description of the skills and competencies actors access through their associations with other actors. Interconnected with the actor-network view of agency, habitus is not, in

Latour's mind, a possession of actors, but resides within the relations between actors who "plug-in" to relations with other actors in order to "download" agency – i.e. act (Latour 2007). In this study, network-building actors "plugged in" to other actors in order to "download" support for their discourses. Resulting from their expressed reliance upon scientific rationality and enrollment of scientists to support their discourse, the practices of BPI are described as following a "scientist habitus." BPI problematized LFTB as an important technological innovation for improving food safety, consumer health, environmental sustainability, and problems of world food supply. BPI also enrolled academics within the fields of animal science and food science to support these problematizations.

In contrast to BPI's scientist habitus, the practices of ABC News are categorized using the concept of a "moral panic habitus." This concept combines Goode and Ben-Yehuda's theory of "moral panics" with Latour's conceptualization of "habitus" to explain the practices of ABC News. The moral panic habitus of ABC News is characterized by their employment of a "feedback loop of concern" to plug into consumer concerns over food by questioning LFTB, soliciting concerned consumer comments, and using the consumer attention they garner to further fuel concerns over the product. Additionally, this study also suggests that ABC News employed exaggeration and sensationalist language when communicating the threat of LFTB.

Limitations & Future Study

Though this study provides insights into the practices employed by network-building actors in the 2012 LFTB food scare, some limitations are worth mentioning.

The primary limitations to this study are twofold: 1) generalizability – it is difficult to generalize the findings of this study to the understanding of other food scares, and 2) level of detail – utilization of qualitative content analysis translated to a lack of detail with regard to the specifics of interactions between actors.

Though it was not the stated goal of the study, this analysis is limited with regard to the generalizability of conclusions that can be drawn from the 2012 LFTB food scare to other food scares. Variations in the type of food involved (e.g. meats, produce, shelf-stable processed foods) and the nature of the scare (i.e. bacterial contamination, concerns over chemical agent, adulteration) present challenges for generalizing findings from any one food scare study to providing insights into other food scares. This study examined the 2012 LFTB food scare, which involved an animal-derived food that undergoes a highly-specialized process (e.g. spun in centrifuge, ammonia treatment). These unique characteristics thus limit the degree to which insights derived from studying the 2012 LFTB food scare can be generalized to other food scares. Problems of generalizability in the study of food scares translate to difficulties in forming and testing theories about why food scares happen, how they impact agrifood networks, and what policies, if any, should be in place for policy makers to better evaluate the threats scares pose.

One recommendation to address this limitation is for future studies to focus on examining similarities and differences of multiple food scares versus utilizing a case-study approach that examines one specific event. Perhaps through some comparative comprehensive analysis of food scares, researchers might build stronger theories explaining the processes by which food scares occur, how they are typically handled by policy makers, and what, if any, more appropriate policy responses might be crafted. In

contrast to the limitation of generalizability, this study is also limited in the degree of detail provided explaining the relations between actors.

Utilizing a content analysis of video footage translated to sacrifices in the degree of detail obtained regarding the processes by which network-building actors enrolled other actors into their respective discourse coalitions. The video analysis is limited, for example, regarding the depth of the relationships between BPI and the various academics they enrolled to support their discourses. Though analyzing videos revealed the relations during the food scare, this method could not examine relations prior to the scare and consequently raises some important questions. What were the relations between various actors of the pro-LFTB discourse coalition (e.g. BPI, politicians, academics) prior to the 2012 LFTB food scare? What practices within ABC News influenced, out of many possible newsworthy events, the decision to pursue an exposé-style report on lean finely-textured beef? What specific information or actions taken within the ABC News story captured consumer concerns and ultimately influenced many of them to revolt against LFTB? Answering any of these questions would provide a more detailed understanding of actors' practices during the 2012 LFTB food scare, including the credibility of the "scientist" and "moral panic" habitus concepts used to explain them.

Pursuing these answers requires gathering data directly from actors through interviews or perhaps, at least for consumer perspectives, surveys. The fleeting nature of food scares, however, means that data collected through obtrusive methods need to consider the temporal dimensions of the scares – especially as they relate to consumers (i.e. concern may fluctuate). Additionally, food scares occur in a complex political and

legal context (e.g. food disparagement laws) that may heighten barriers of access to key actors.

One possible avenue for future food scare research is to explore methodological avenues to overcoming these temporal and political barriers. This study partially circumvented these challenges through utilizing a non-obtrusive approach, but it was not without sacrifices to specificity. Developing methodology for food scare studies that more directly accesses key actors is a key for yielding a more detailed analysis.

Final thoughts

The discussion of limitations above revealed that, along with some important insights, this study unearthed more questions than answers. Perhaps the most important of these questions, at least to critical scholars of food and agriculture, involve the intersection of the university and food scares. BPI's enrollment of various academics to support their discourse raises a question regarding boundaries between land-grant universities and industrial food and agriculture companies. Specifically, how do food scares like the 2012 LFTB scare reflect contemporary relations between land-grant universities and agrifood industry? With decreasing public dollars available for university research, land-grant universities are increasingly reliant upon private money, especially from industry, to fund research activities (National Science Foundation 2012). This trend raises concerns regarding the degree to which changes in funding relocates the locus of control over research agendas (i.e. what agendas are supported and which are suppressed) from the direction of researchers and public needs to the profit-focused needs

of industry. Though public and private needs may overlap, food scares and other food controversies reveal that they are not always in harmony with one another.

Food scares like the 2012 LFTB scare unpack blackboxed relations within agrifood chains and thus provide avenues for scholars to interrogate the extent to which contemporary land-grant universities serve as extensions of private agrifood industry. The challenge for food and agriculture scholars is how to navigate the relations constituting food scares while conscious of their own preconceptions.

As the 2012 LFTB food scare revealed, discourse, especially as it is filtered through the lenses of network-building actors, is fragmented. While LFTB is a product of modern industrial food technology, it can arguably be contextualized as embodying a "nose-to-tail" eating philosophy more reflective of upper middle-class foodie culture and thus a less wasteful and more sustainable way to feed a population that insists animal flesh be included in their menu options. Some anti-LFTB actors like food blogger activist Bettina Siegel heralded the removal of LFTB from school lunches as a triumph of consumer choice (ABC News 2012[e]). If we are to hold the exclusion of LFTB from the ground beef supply as reflective of a democratic food system, then, if the sustainability claims by BPI are accurate, we also must accept the reality that a more democratic food system is not always more environmentally sustainable. However, even if LFTB makes consuming beef more sustainable, perhaps the most sustainable option is for a society to eschew consumption of animal products altogether (Eshel and Martin 2006).

Food scares are events that expose the relations and discourses where these murky realities of the contemporary food system reside. Perhaps though continuing to "follow

the controversies" as suggested by Latour (2007), food scholars will also contribute to a discussion that moves food politics beyond the false dichotomies like "sustainable" and "conventional" that reside comfortably in the discourse of contemporary food studies.

APPENDICES

Appendix A. Timeline of the 2012 LFTB Food Scare

YEAR	EVENT
2001	United States Food and Drug Administration (FDA) and United States Department of Agriculture (USDA) approve BPI's ammonia pH enhancement system for use in production of LFTB (Greene 2012)
2002	The term "pink slime" is coined in an internal email of USDA scientist Gerald Zirnstein (Moss 2009)
2008	BPI and founder Eldon Roth appear in the nationally-syndicated documentary, *Food, Inc.* (Food Inc. 2008)
2009	Article discussing the safety of LFTB is published in *The New York Times* (Moss 2009)
2011	ABC television program, *Jamie Oliver's Food Revolution* airs episode on "pink slime" (Oliver 2011)
2012 – February 1	McDonald's restaurants discontinues the use of LFTB (Flock 2012)
2012 – March 7	*ABC World News with Diane Sawyer* airs the first of a six-part investigative report on "pink slime" (ABC News 2012[a])
2012 – March 7	Food blogger Bettina Siegel launches Change.org petition "Tell USDA to Stop Using Pink Slime in School Food!" (Siegel 2012)
2012 – March 9	BPI launches "Beefisbeef.com" website where it posts a variety of pro-LFTB videos and resources
2012 – March 15	USDA announces change of National School Lunch Program Policy to allow states a choice of purchasing ground beef with or without LFTB (Greene 2012)
2012 – March 20-23	Major grocery retail chains announce plans to stop selling LFTB beef or label it (ABC News 2012[f])

2012 – March 25	BPI suspends operations in three of its four plants (ABC News 2012[e])
2012 – March 29	Governors and Lt. Governors from five states along with representatives from USDA and interest groups hold press conference at BPI (Beef Products Incorporated 2012[d])
2012 – March 29 to April 2	Restaurant chain Red Robin commissions a survey of consumers regarding "pink slime." 88 percent of respondents claim to have heard of "pink slime," 76 percent at least somewhat concerned about it (Caulfield 2012)
2012 – April 2	USDA approves LFTB labels (Greene 2012)
2012 – April 10	Iowa State University Block and Bridle club hold rally in support of LFTB. Students, faculty, politicians, and BPI personnel attend (Furfaro 2012)
2012 – September 13	BPI announces it will sue ABC News for the sum of $1.2 billion (Beef Products Incorporated 2012[l])
2013 – September 10	Four states return to purchasing LFTB for school lunches (Knowles 2013)
2014 – August 18	BPI reopens Garden City, Kansas plant (Huffstutter 2014)

Appendix B. Beef Products Incorporated YouTube Videos

Video Title	Date Posted*	Content Description
"Beef Products New Testing for E.coli"	07/13/2011	Craig Letch, BPI Director of Food Safety describes BPI's "test and hold" E.coli testing program
"Ammonia in Foods"	11/07/2011	BPI discusses the presence of ammonia in food as well as its use of ammonia in LFTB. Discuss "feeding the world."
"Innovations in Food Safety"	11/07/2011	Various PhD scientists discuss the "NEED FOR INNOVATION."
"Jamie Oliver Mischaracterizes Lean Beef"	03/08/2012	Scientists and male narrator discuss J. Oliver's portrayal of the LFTB on his *Food Revolution* ABC show.
"Food Inc. was Wrong on Portraying Lean Beef"	03/08/2012	Plant manager from BPI, Jay Williams, discusses the portrayal of the LFTB process in the film *Food Inc*.
"Beef Products on RFD-TV Live"	09/25/2012 (Aired on 6/25/12)	Jay Williams and Rich Jochum appear on RFD-TV (Rural Free Delivery) to discuss LFTB critics and the production process.
"BPI Press Conference"	09/17/2012 (Aired on 09/13/12)	Press conference announcing BPI's lawsuit against *ABC News*.
"BPI Responds to USDA Decision on Lean Finely Textured Beef"	10/05/2012	Craig Letch, BPI Dir. Of Food Safety, responding to USDA's new policy on LFTB in the NSLP.
"Myth: Ordinary Household Ammonia is Used to Make Some Hamburgers"	8/28/2013	Dr. Acuff (TX A&M) and Janet Riley (American Meat Institute) discuss use of ammonia in LFTB.
"The Facts About Lean Finely Textured Beef"	09/24/2013	Janet Riley, AMI VP of Public Affairs & Member Services, discusses "misinformation" and "wild rumors" of LFTB. Explains LFTB.
"Lean Finely Textured Beef Forum Terry Branstad"	09/24/2013 ("The Truth: Lean Finely Textured Beef" Rally on 4/10/2012)	IA Gov. Terry Branstad at Iowa State University speaking about "misinformation circulated in media" about LFTB.

"Lean Finely Textured Beef Forum Q & A"	09/24/2013 (Rally on 4/10/2012)	Jim Dickson, ISU Professor answers questions at "The Truth: LFTB" rally.
"Lean Finely Textured Beef Forum Jim Dickson"	09/24/2013 (Rally on 4/10/2012)	Jim Dickson, ISU Professor, lays out process and responds to "misconceptions" about LFTB.
"Lean Finely Textured Beef Forum Janet Riley"	09/24/2013 (Rally on 4/10/2012)	Janet Riley, AMI, discusses the "misinformation" about LFTB and *ABC News* broadcasts. Heavily criticizes modern media.
"Governors Stand Behind BPI's Products"	09/24/2013 (Occurred 3/30/12)	Press conference with 2 Lieut. Governors, 3 Governors, USDA Undersecretary of Food Safety, and media to discuss LFTB.
"Gov Branstad US Ag Sec Tom Vilsack hold join press conference on beef safety"	09/24/2013 (Occurred 3/28/12)	IA Gov. Branstad and US Ag. Sec. Tom Vilsack discuss safety and "misinformation" about LFTB. Vilsack discusses importance of educating "population 3, 4, 5 generations removed from the farm."
"Dr. Russell Cross Talks about the Safety of LFTB"	09/24/2013	Dr. Cross, Head of TX A&M Animal Science Dept, answers questions about LFTB.
"USDA Secretary Vilsack on Lean Finely Textured Beef"	09/25/2013 (Interview occurred on 03/20/2012)	US Ag. Sec. Tom Vilsack vouches for safety and allowing LFTB in NSLP. Also discusses new policy of allowing schools in the NSLP to choose between LFTB and LFTB-free ground beef.

* "Date Posted" reflects latest date as displayed on YouTube. Some videos were posted before this date, later received edits in content or textual description, and were reposted subsequently reflecting more recent date.

Appendix C. ABC News Videos

Video Title	Air Date	Content Description
"Pink Slime and You" – *ABC World News with Diane Sawyer*	03/07/2012	First broadcast with Jim Avila reporting on "pink slime."
"*ABC News* Update – 'Pink Slime' in Hamburger" – *ABC News*	03/08/2012	Recap of previous night's "Pink Slime and You" broadcast
" ' Pink Slime' – Tips for Checking your Beef" – *ABC World News with Diane Sawyer*	03/08/2012	Sawyer and Avila report on "How to tell if there is pink slime in your dinner."

" 'PINK SLIME' Outrage: Beef Industry Responds" – *ABC World News with Diane Sawyer*	03/09/2012	Sawyer and Avila air consumer questions and interview with Costco and Janet Riley of AMI.
" 'Pink Slime' in School Cafeterias, Supermarkets" – *ABC News Nightline*	03/15/2012	David Muir and David Kerley reports on supermarkets, the NSLP, and their use of LFTB.
"Pink Slime Taste Test" – *ABC News Nightline*	03/16/2012	David Muir and David Kerley report on a cookbook author who does a "taste test" comparing ground beef with and without LFTB.
" 'Pink Slime' – Safeway Pulls Meat Filler from Shelves" – *ABC News – Good Morning America News*	03/21/2012	Jim Avila announces that Safeway stops using LFTB as a response to consumer demands.
" 'Pink Slime' Discontinued at Safeway" – *ABC World News with Diane Sawyer*	03/21/2012	Sawyer and Avila report on Safeway and other supermarkets who discontinued the use of LFTB. Discuss that they will have a list on their website where consumers can see who does or does not use LFTB.
" 'Pink Slime' Manufacturer Suspends Operations" – *ABC World News with Diane Sawyer*	03/26/2012	Sawyer and Avila report that because so many grocery chains dropped LFTB, BPI is suspending operations in 3 plants.
"*ABC News* Update" – *ABC News*	03/29/2012	Report about Governors touring BPI's factory in Dakota Dunes.
" 'Pink Slime' Factory – A Look Inside" – *ABC World News with Diane Sawyer*	03/29/2012	Sawyer and Avila report on Avila's tour of BPI's plant in South Sioux City, NE. Includes Q & A with Governors, BPI personnel, and USDA Undersecretary of Food Safety.
"Stock Market Outlook for Second Quarter" – *ABC News Money Matters*	04/02/2012	Male and Female reporter discuss AFA foods, a smaller maker of LFTB, filing for bankruptcy protection.
" 'Pink Slime' Labels on Ground Beef Packaging" – *ABC World News with Diane Sawyer*	04/03/2012	Sawyer and Avila report on pending approval of new proposed labels for LFTB. Say that "USDA" is trying to "split-the-baby" by pleasing industry and consumers.

Appendix D. Coding sheet for BPI Videos

Category/Classification	CODES	
Actors	❖ **Ammonia** ❖ **Beef Industry** ❖ **BPI Personnel** ➢ Rich Jochum – Corporate Administrator ➢ Craig Letch – Director of Food Safety ➢ Eldon Roth – Founder & CEO ➢ Nick Roth – Engineering ➢ Regina Roth – Co-founder ➢ Dan Webb – Chief Counsel ➢ Jay Williams – Plant Manager ❖ **Consumers** ❖ **E.coli** ❖ **Foodborne illness** ❖ **Economists/Lawyers** ➢ Bill Marler – Foodborne Illness Lawyer ➢ Jim Robb – Senior Ag. Economist & Director of Livestock Marketing Information Center ❖ **Government** ➢ **USDA** ▪ Gerald Zirnstein – Former USDA Meat Inspector ▪ Dr. Elisabeth Hagen – Undersecretary of Food Safety, USDA ▪ Tom Vilsack – US Secretary of Agriculture ❖ **Grocery Store Chains** ➢ Hy-Vee ➢ Safeway ❖ **Interest Groups** ➢ American Meat Institute ▪ Janet Riley – Senior VP of Public Affairs and Member Services ➢ Animal rights groups ➢ Protect the Harvest ▪ Erik Helland – Spokesperson • Former Republican IA State Representative ➢ STOP Foodborne Illness ▪ Nancy Donley – President ❖ **Labels** ❖ **LFTB** ❖ **Media**	

	➢ ABC News ▪ Jim Avila – Senior National Correspondent ▪ Diane Sawyer – Anchor, *ABC World News with Diane Sawyer* ➢ Jamie Oliver ➢ Local Reporters ▪ Ben Dunsmoor – KELO TV Sioux Falls ➢ RFD-TV ▪ Mark Oppold – Host of RFD-TV Live ❖ **Politicians** ➢ Terry Branstad – Republican Gov. of IA ➢ Sam Brownback – Gov. of KS ➢ Erik Helland – Former Republican IA State Representative ➢ Stephanie Herseth Sandlin ▪ Former Democratic US Rep. from SD ➢ Matt Michels – Republican Lt. Gov. of SD ➢ Rick Perry – Republican Gov. of TX ➢ Rich Sheehy – Republican Lt. Gov. of NE ❖ **Scientists and Academics** ➢ Gary Acuff – PhD Food Science & Technology ▪ Professor and Director of the Center for Food Safety at Texas A&M University ➢ Jim Dickson – PhD Food Science & Technology ▪ Professor of Animal Science, Iowa State University ➢ John Floros – PhD Food Science & Technology ▪ Dean of College of Agriculture, Kansas State University ➢ Lawrence Reitzer – PhD Molecular & Cell Biology ▪ Professor of Biology, University of Texas at Dallas ➢ David M. Theno – PhD Microbiology ▪ Worked as a food safety consultant for Gray Dog Partners, Inc. ▪ Senior VP and Chief Food Safety Officer for Jack-in-the-Box restaurants	
Claims about Ammonia	❖ Ammonia is safe ❖ Ammonia is natural ❖ Ammonia is not an ingredient or additive ❖ Ammonia is a necessary innovation	

Claims about BPI	❖ BPI is a good company ➢ BPI is a family company (owned and operated) ➢ BPI has Midwestern values ▪ Strong work ethic, value family ➢ BPI values food safety ➢ BPI is an industry leader ▪ Food safety ▪ Innovation	
Claims about consumers	❖ Consumers want lean beef ❖ Consumers want LFTB ❖ Consumers have been misled/lied to/given false info.	
Claims about LFTB	❖ LFTB is safe ❖ LFTB is wholesome/nutritious ❖ LFTB is USDA approved ❖ LFTB is beef ❖ LFTB makes ground beef more affordable ❖ LFTB makes ground beef more nutritious ❖ LFTB is not an additive ❖ LFTB is not filler/scraps ❖ LFTB provides jobs ❖ LFTB is desired by consumers ❖ LFTB is efficient ❖ LFTB is sustainable ❖ LFTB will help feed the growing world population ❖ LFTB is not dog food	
Claims about the media	❖ ABC News ➢ ABC defamed BPI ➢ ABC made false statements ➢ ABC news blacklisted BPI customers ❖ Media misled consumers ❖ Media has hidden agenda ❖ Media uses scare tactics ❖ Media has caused job loss	
Communicative techniques	❖ Imagery ➢ Animations ➢ Scientific imagery ❖ Language ➢ Terms for LFTB ▪ “Dude, it’s beef!” ▪ Filler ▪ Pink slime ▪ Trimmings ▪ Scraps	

	➢ Use of second person ▪ Posing questions to viewer ▪ Telling view what "you need to know"	

Appendix E. Coding sheet for ABC News Videos

Category/Classification	**CODES**	
Actors	❖ **Ammonia** ❖ **Beef Industry** ❖ **BPI Personnel** ➢ Kit Foshee – Former BPI Employee ➢ Rich Jochum – Corporate Administrator ➢ Craig Letch – Director of Food Safety ➢ Eldon Roth – Founder & CEO ➢ Nick Roth – Engineering ➢ Regina Roth – Co-founder ➢ Dan Webb – Chief Counsel ➢ Jay Williams – Plant Manager ❖ **Consumers/Viewers** ➢ Emily Anderson – Albuquerque, NM ❖ **Critics** ❖ **Food Retailers** ➢ Grocery Store Chains ▪ Costco • Craig Wilson – VP of Food Safety ▪ Fred Meyer ▪ Food Lion ▪ Giant ▪ H-E-B ▪ Kroger ▪ Publix ▪ Safeway ▪ Sam's Club ▪ Stop & Shop ▪ Wal-Mart ▪ Whole Foods ➢ Fleisher's Grass-fed & Organic Meats ▪ Joshua Applestone – Organic Butcher, Brooklyn, NY ❖ **Government** ➢ USDA ▪ Carl Custer – Former USDA Meat Inspector	

	▪ Dr. Elisabeth Hagen – Undersecretary of Food Safety, USDA ▪ Jo Ann Smith – Former USDA Undersecretary of Agriculture • Former president of Denver-based National Cattlemen's Association • Founder of National Beef Promotion and Research Board • Cofounder of Beef Check-off • Served on boards for Iowa Beef Producers, Purina Mills, and Tyson Foods ▪ Gerald Zirnstein – Former USDA Meat Inspector ❖ **Interest Groups** ➢ American Meat Institute ▪ Janet Riley – Senior VP of Public Affairs and Member Services ➢ The Lunch Tray ▪ Bettina Siegel – Blogger, Food Author, Former Lawyer ❖ **Labels** ➢ LFTB Label ➢ USDA Organic ❖ **Media** ➢ ABC News ▪ Jim Avila – Senior National Correspondent ▪ David Kerley – Washington Correspondent ▪ Janice McDonald – Producer in Atlanta, GA ▪ David Muir – Weekend Anchor, *World News* ▪ Diane Sawyer – Anchor, *ABC World News with Diane Sawyer* ▪ Candace Smith – Producer in NY, NY ➢ Associated Press ▪ J.M. Hirsch – Food Editor ❖ **National School Lunch Program**	
Claims about *ABC News*	❖ *ABC News* is "on the case" ❖ *ABC News* "broke the story"	
Claims about ammonia	❖ Asks questions of concern with ammonia	

Claims about BPI	❖ Conflicts of interest ❖ Using LFTB is economic fraud	
Claims about consumers	❖ Consumers are outraged ❖ Consumers are concerned ❖ Consumers want LFTB free ground beef	
Claims about LFTB	❖ LFTB is pink slime ❖ LFTB is hidden in ground beef ❖ LFTB was once only used in dog food and cooking oil ❖ LFTB is a filler ❖ LFTB is not real ground beef ❖ LFTB is in 70% of the US ground beef supply ❖ LFTB is a cheap substitute ❖ LFTB is an additive ❖ LFTB is made from low-grade trimmings ❖ LFTB is less nutritious than ground beef	
Communicative techniques	❖ Editing ➢ ❖ Imagery ➢ Raw beef ➢ Images of beef scraps ➢ Text font ▪ Use of CAPS ❖ Language ➢ Investigative reporting language ➢ Number manipulation ➢ Use of second person ▪ Posing questions to viewer ▪ Telling viewers what “you need to know”	

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